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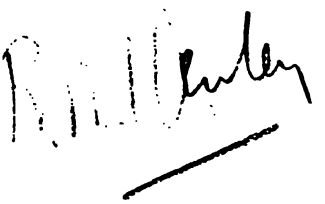

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METAPHYSICS

A STUDY IN FIRST PRINCIPLES

BY

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LONDON
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Dedicated

IN GRATEFUL RECOLLECTION

TO THE MEMORY OF MY FRIEND AND FORMER TEACHER

HERMANN LOTZE

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PREFACE.

That works on metaphysics are always useless, and generally absurd, is the profound conviction of many. This conviction, indeed, has seldom been reached by reflection, but is the outcome of echo, hearsay, and party-tradition. Such creeds are always of the strongest; for, not being founded upon argument, argument cannot shake them. Fashion, or rather that somewhat variable and multiform sprite, the spirit of the times, determines both their coming and their going. Hence, holders of the creed mentioned generally cherish a profound scorn for metaphysical writers, which scorn is, not infrequently, met with an equal and opposite contempt. Metaphysicians are apt to think, with Schelling, that philosophy is not everybody's affair; and if others find their writings useless or superfluous, they reply, with Fichte, that such persons do not belong to those for whom they wrote. But neither scorn nor contempt proves anything which it is important to have established. In the last resort, the decision concerning the true and the false must depend, not on sneers and supercilious assumption, nor even on the spirit of the times, be that sprite one or many, but on plain fact and logic.

There is an immanent metaphysics in all thinking and in all science. Physics is founded on metaphysics. Its basal ideas are not given in experience, but are metaphysical notions whereby we seek to interpret experience. Whoever will reflect upon the current arguments of what is pleased to call itself the new philosophy, will see that they all imply a definite metaphysical conception of the system of things, and that they lose their grip without it. Most beliefs, in short, are but implications of a system of metaphysics, consciously or unconsciously held; and they run back to that system for their justification. The great debates of the time are essentially metaphysical. The debaters seldom suspect it; and yet both sides are busy with the nature of being, and with the antitheses of freedom and necessity, of matter and spirit, and of the finite and the infinite. The phenomena of the system are the same for all; the dispute concerns their interpretation; and this, in turn, depends entirely upon our metaphysics. When, then, any one fancies, in good faith, that metaphysics, or metaphysical assumptions, can be escaped, one is strongly tempted to vault forthwith into the seat of the scornful. Since, then, we must use metaphysical conceptions, whether we will or not, it is allowable to make these notions the subject of a special inquiry, with the aim of fixing their value and significance. This is all the more permissible from the fact that the pretended repudiation of metaphysics always has the practical result of assuming without criticism a very definite system of metaphysics—generally, a materialistic fatalism. This work is meant as such an inquiry. It is by no means a "mental philosophy," which is the common understanding of metaphysics; it is rather an exposition and criticism of

our fundamental philosophical concepts. And, whatever the value of the results reached may be, I am convinced that the progress of philosophy, for some time to come, must lie in this direction.

Among the various idols mentioned by Bacon, the idols of the cave, or den, are those which are most likely to influence students. The loneliness of the study and its distance from practical effort enable such idols to practise their malign seductions with eminent success. Hume, also, has told us how, after a social chat, or a game of backgammon with a friend, his speculations seemed to him to be so cold and strained as to be, not merely unacceptable, but almost unintelligible. So great is the power of the den. Whether in the views herewith presented I have grasped any truth; or whether, by long brooding in solitude, I have fallen a prey to some idol of the speculative den, must be left to the reader to decide. I am encouraged, however, to hope that I have not gone wholly astray by the fact that there is nothing unheard-of in the results reached. Leibnitz furnishes the starting-point, Herbart supplies the method, and the conclusions reached are essentially those of Lotze. I have reached them, for the most part, by strictly independent reflection; but, so far as their character is concerned, there would be no great misrepresentation in calling them Lotzian. So much concerning pedigree.

The speculative significance of theism and of freedom has been especially emphasized in these pages. Of late years, the impression has widely prevailed that the belief in God and freedom exists only by sufferance, so that if logic were allowed to have its way, this belief would soon be beyond the reach of hope and mercy. Not sharing this convic-

tion, although it is said to have the fullest endorsement of the spirit of the times, I have rather sought to show that the truth of this belief is a matter of life and death to all philosophy and rational science. This has been done, however, from a purely speculative interest, and not with reference to the ethical and religious bearings of the question. These must be considered by themselves. But while speculative discussions must not be confused by irrelevant practical issues, I may add, even at the risk of another disagreement with the spirit of the times, that neither reflection nor observation enables me to regard an indifference to moral and religious interests as the supreme proof of mental power or even of philosophic impartiality. "Gallio cared for none of those things," and was not the most just of judges after all.

I have divided the work into three parts, whose titles are strongly suggestive of the ancient scholastic treatises on metaphysics. But the resemblance does not go beyond the titles; and these have been used as indicating better than any others the natural divisions of the subject. Ontology, or existence in general; cosmology, or cosmical existence and processes; and psychology, or psychical existence and processes, are the divisions which reflection upon experience immediately suggests. Of course, it is not expected to reach a knowledge of details by the way of speculation, but only to reach an outline-conception of reality which shall be valid for all details, and within which all specific study must be carried on.

BORDEN P. BOWNE.

BOSTON, *January*, 1882.

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METAPHYSICS.

INTRODUCTION.

PHILOSOPHY, as a special form of mental activity, seeks to answer these two questions: How is knowledge possible? What is the true nature of reality? The first question deals with the knowing subject and his relation to the object. The aim is to give an exposition and a theory of the knowing process and to unfold its implications. The second question deals with the nature of the object viewed as a thing in itself. The first question belongs to the theory of knowledge; the second belongs to metaphysics.

By metaphysics, then, we do not mean philosophy in general, but an inquiry into the nature and laws of reality. But the task thus set needs further limitation; for all the objective sciences are trying to solve the same problem to a greater or less degree. To limit the problem, we offer the following exposition: Consciousness reveals two orders of mental action—an order of impressions and an order of reason. The former order is determined partly from without and partly by the laws of association. The latter order is determined from within by the laws of thought itself. Now the constant effort of thought is to reduce the order of impressions to the order of thought, or to rationalize its sense-experiences. It reaches this result by building its sensations into a thought-system according to certain rational

principles. The impressions are referred to things as their causes, and are objectified as qualities of those things. These causes, again, are viewed as distributed in a common space, as continuous and changing in a common time, and as acting upon one another. Impressions are rationalized by bringing into them the principles of being, cause, continuity, change, space, time, number, etc. These principles constitute the framework of knowledge. No matter how we reach them, whether they be acquired by experience or be reached by the native insight of the mind, they are still the framework of our mental system, and without them thought would collapse. But primarily these notions are purely formal; they are categories of thought rather than of reality. Yet if knowledge be possible, these notions must have a significance for reality also. If the laws and categories of our thinking have no meaning for things, then our so-called knowledge would be only a fiction in our own minds, and could never attain to things in themselves. This was the view which Kant took. The categories were restricted to a purely subjective significance with a double result. Knowledge was limited to phenomena; and reality itself was dissolved in subjective idealism. The problem of metaphysics is to determine the content of these fundamental notions when applied to reality. It is not to examine the individual peculiarities of things, but only those general notions which enter into our conception of reality. We may say, then, that metaphysics begins where the sciences leave off. The physicist reduces all physical phenomena to special cases of the redistribution of matter and motion. Matter and force, change and motion, space and time are the ideas employed in the reduction. But the physicist feels no call to analyze and define these notions. He takes them for granted, and applies them without suspicion. Such notions as these constitute the natural metaphysics of the human mind; and both common-sense and natural science are hardly willing to allow that any ques-

tion can be raised concerning either the meaning or the validity of these notions. But the history of thought shows that they need both criticism and rectification. This is the task of metaphysics.

Our knowledge of anatomy is mainly the product of disease. Nerves reveal themselves and their functions by disordered action. In like manner, philosophy is mainly a product of mental disease. The attempt to harmonize the mind with itself is the great source of philosophical knowledge and advance. Both the process and the product of knowledge seem so clear that, if no discord had appeared in our mental life, a proposition to examine them would have seemed like a proposition to explain the self-evident, which admits of no explanation. The mind is so objective in its procedure that nothing but the most pronounced mental discord serves to awaken even the suspicion that things are not what they seem, and that its fundamental notions may need a more careful definition. But experience serves to awaken scepticism. Our fundamental notions are always loosely and often contradictorily conceived in spontaneous thought. Our practical thinking is moulded by practical needs, and hence we never spontaneously give any greater precision to our ideas than practice calls for. But when these conceptions are put into theories and their content is logically developed, or when they are extended beyond their original application, then the results of the looseness become very apparent. Difficulties and contradictions emerge; and reason itself seems swamped in inconsistency. Here is a great source of theoretical errors. Some notion, or notions, which are accurate enough for daily life, are picked up without any criticism and developed to their utmost logical consequences. In this way, their slight parallax with reality is magnified until the result is some grotesque absurdity or some pernicious untruth. The notion of substance is a capital example of the difficulties implicit in the metaphysics of common-sense.

Formally, substance is that which has or supports qualities; it is the real and the constant in change, etc. But this formal outline gets filled up in various ways. Our sense-experience seems to give us things which abide through all change of activity and attribute, and which also exist without any activity whatever. Hence we often conceive of substance as something inert and dead; and we fail to see that such substance could do nothing and explain nothing, not even our knowledge of itself. But we are not long in finding that there are activities in the world; and these must have some subject. Then, without a thought of the inconsistency, we refer them to the same things which at other times we view as inert and dead. Thus the inactive is made the source and support of various activities. Again, we think of the substance as unchanged through all changes of attribute; and this produces another difficulty. The substance as changeless contains no explanation of the changing attributes; and these, in turn, no longer reveal the true nature of the substance. Thus the substance retreats behind the appearance as an impenetrable mystery; and the appearance, as unexplained by the substance, is no longer any reason for affirming a substance. This notion of inherence is the root both of the idle mystery of the thing in itself and of phenomenalism in speculation. Still another difficulty arises. Our conception of substance is formed largely from the phenomena of matter; and thus material substance becomes the type of all substance. Thus we learn to think of substance as something behind activity and not very closely connected with it. But when we apply this conception to the soul and God, there arises the thought that their living and intelligent activity is something secondary and phenomenal rather than essential. Hence the soul is not essentially life and intelligence, and the basal, essential fact of the universe is the non-living and unintelligent. Back of the living intellectual outgo, there is an impenetrable core of impersonal mystery. Such are

some of the difficulties in the current notion of substance; and they arise entirely from picking up without criticism the spontaneous notions of uncritical thinking. It is not necessary to develop the contradictions in the current notions of cause and effect, space and time, etc.; they will appear in the course of the discussion. Now it is plain, we think, that our fundamental notions are commonly conceived with great looseness and lack of precision; the resulting confusion is illustrated by the whole history of philosophy. The aberrations of philosophy may nearly all be traced to misconceptions of these fundamental notions. It is, then, desirable that a special criticism and exposition of these ideas should be undertaken with the aim of making them more exact and of eliminating their contradictions. To do this, we repeat, is the task of metaphysics.

But is not such a task essentially hopeless? Do not scepticism, the critical philosophy of Kant, and the general doctrine of the relativity of human knowledge forbid such an attempt? At all events, it seems as if we should discuss these questions before beginning our work. Our aim, we said, is to criticise our notions of reality and thus determine the true nature and connections of things. But this assumes that our notions of reality correspond to it; and who shall assure us of this correspondence? These objections seem very forcible, and demand consideration.

In a certain sense knowledge is universally subjective. So long as knowing means anything intelligible, it consists not in being the thing known, but in forming conceptions of it; and knowledge consists in the conceptions thus formed. By no possibility can the mind transcend its conceptions; and the object exists for the mind only as it is conceived. Hence a thing can never be more for the mind than a realized conception. However real the outer world may be, the mind can grasp that world only through the conception it forms of it. But this is no weakness of the human mind and no limitation of human knowledge. It

is a necessity of all minds and of all knowledge, so long as knowledge has any articulate meaning. In this sense, that no mind can transcend its conceptions, all knowledge is universally subjective, and represents reality not apart from thought, but as it appears in thought. It follows that the demand to know things in themselves is absurd, if by things in themselves be meant things out of all relation to thought. Reality as it appears in thought may be known; but reality as it does not appear in thought is unknowable in the nature of the case. It is a simple matter of definition that that which never appears in thought can never be grasped by thought. It further follows that the only rational aim of the knowing mind must be to find, not what the real is apart from thought, but the universal predicates of the real in thought; that is, those predicates which all thinkers affirm under the same circumstances. The goal is reached when we have come to what Ferrier calls "the common to all," and not merely "the special to me." But this "common to all," though not dependent on my thought or your thought, as then it would be special to me or to you, can never be known as independent of all thought, for knowledge can never be of reality except as it appears in thought. This element of universality is prominent in many of our perceptions and judgments; and spontaneous thought seeks to express it by declaring that the thing exists as perceived, or that the judgment is true apart from all thought. Taken literally, this statement is absurd; it is an attempt to tell how a thing appears when it does not appear, or how thoughts are related when there are no thoughts to relate. It is merely a strong way of saying that the results are valid for all and are not subjective fictions of the individual. Finally, it follows that a knowledge of things in themselves can only mean a knowledge which shall be universally valid. In any other sense, the phrase has not the slightest meaning. Hence the question, What is reality? reduces to this other question, How must we think about

reality? And this, we repeat, is true not only for our intelligence, but for all intelligence. The question of metaphysics, then, finally becomes, How must we think of reality?

But we have not yet disposed of the sceptic. In spite of the previous exposition, he objects that we can never know that our conceptions correspond to reality. Since we can never transcend our conceptions, things in themselves may be quite unlike our thought of them. But here the sceptic falls a prey to one of the many prejudices of common-sense. For him the undoubted reality is not the knowing subject, but the things in themselves. In truth, however, things are only hypotheses to explain our experience, and can be admitted only as they furnish such explanation. The thinking subject being the starting-point of speculation, and things being only hypotheses to explain the thinker's experience, it is plain that there can never be any reason for positing realities unrelated to thought. Such realities are simply *xs*, which explain nothing and which cannot be brought into any articulate relation to our thought-system. As such they are purely gratuitous. A rational experience can never be any ground for affirming an irrational reality. Hence we object to the thing in itself in this sense of something which eludes all thought-determinations, not that it is unknowable, but that it is rationally unaffirmable. Reason will always repudiate the irrational reality and take refuge in idealism as the more rational doctrine.

In the second place we object to the sceptic that we do not know what he means by the "correspondence" of our conceptions with reality. In daily life we define truth as the correspondence of thought with thing; and the definition is accurate enough for practical purposes. But taken in strictness, this definition assumes that we can first know the thing, and then form a conception of it, and can finally compare the thing as known with our conception of it, and note their agreement or disagreement. Nothing of the kind is possible. The thing exists for our thought only in

and through the conception; and hence there can be no comparison of thought with thing, and hence, again, there can be no correspondence of thought and thing. What we call comparing our thought with the thing is always a comparing of one thought with another thought. We change our relations to the thing with the aim of seeing whether the present conception will not be displaced by another. When it holds its ground, we say it corresponds to the thing; and when another conception displaces it, we say that it did not correspond to the thing. But the mind can never transcend its conceptions so as to grasp things other than through its conceptions; and hence truth cannot be viewed as the correspondence of thought and thing, but as the universally valid in our thought of the thing. That is the true conception of reality which grasps the "common to all" and not the "special to me." Hence, when the sceptic asks how we know that our conceptions correspond to things, he shows that he is a slave to the prejudices of uncritical thinking. First he assumes that things rather than thought are certain, and next he assumes the possibility of transcending our conceptions. Both of these assumptions indicate a somewhat unprogressive type of intellect.

It being absurd to demand that the mind shall transcend its conceptions and compare them with reality, it follows that the test of knowledge must be found in the content of knowledge itself. Ultimately this test will consist (1) in the self-evidence or necessity of the conception, and (2) in the inner harmony of our conceptions with one another. When a conception is self-evident or necessary, and when no mental discord results from it, we have the only test of knowledge possible to any intelligence whatever. A scepticism based on the impossibility of transcending our conceptions is not so much wanton and gratuitous as essentially absurd. Again, scepticism to be rational must be based on reasons. In this respect the sceptic is subject to the same demand for proof as every other theorist. The sceptic's

claim is always that some proposition is doubtful. But the mere fact that he doubts is in itself no argument. To raise his doubt from a merely subjective value to a rational significance, he must support his doubt by definite arguments. Yet throughout the history of speculation there has been a tacit assumption by the sceptic that his doubt itself constitutes an argument. This claim the critic must reject, and force the sceptic to take his place with other theorists, and give reasons for the unfaith which is in him. Both faith and unfaith, as subjective facts, are without rational significance; they acquire this only through the grounds by which they are justified. The only scepticism, then, of our fundamental notions which merits any attention is that which aims to show that they are discordant among themselves. But this scepticism can arise only at the end of investigation, and not at the beginning. For before our conceptions of reality are declared discordant we must find out what they are and determine their exact meaning. The presence of discord in loose, unreflective thinking is no ground for general scepticism. Correct thinking does not come by nature. The discord becomes significant only when the reflective reason has declared it irreducible. Hence sceptical doubts of the validity of knowledge cannot be settled in advance; but only after the reflective reason has determined what the mind really says. If careful analysis and definition fail to eliminate the discord and contradiction, then scepticism may begin. Yet even then the sceptic assumes some knowledge of reality. He assumes (1) the continuity of reality, and (2) the universal validity of the thought-laws of identity and contradiction. His argument from discordant conceptions to their parallax with the fact rests entirely upon the assumption that reality is and must be consistent. If it might possibly be inconsistent, inconsistency in our conceptions would be no proof of opposition to the fact; and a pair of contradictions might express the inmost essence of reality. Again, if we allow that reality need not be con-

tinuous, then our discordant conceptions might be viewed as conceptions of different realities, and hence their discord would lose all significance. Different views of different things are allowable; only contradictory views of the same thing are obnoxious to reason. Now if the attempt to rectify our notions, so as to make them adequate and consistent, should be successful, the rational ground for scepticism would disappear, and the question would need no separate discussion. Without doubt there is much that is purely subjective in our conceptions. The world as it exists for sense is unlike the world as it exists for thought. Since the time of Democritus, the world has been familiar with the distinction between primary and secondary qualities. Hence, before the question of the validity of our conceptions can be discussed to advantage, we must, by analysis and criticism, separate the special from the universal element in knowledge. To treat the question before making such analysis is to open the way to endless paralogism and logical inconsequence. On all these accounts, therefore, we hold that the question of scepticism is second, and not first.

So far as the Kantian and relativist doctrines are identical with those of the sceptic, they are considered in the previous paragraphs. No speculator is entitled to consideration by the doubts he expresses, but only by those which he rationally justifies. The disciples of relativity in thought have always been haunted by the fancy that the mind must be able to transcend its conceptions in order to reach absolute knowledge; and as we are shut up within the limits of our conceptions, our knowledge is only relative, and hence is valid only for us. But we have already seen that this conception of absolute knowledge is essentially absurd; because to know is never to be the thing, but only to form conceptions of it which shall be valid for all intelligence. We have here the same crude assumption which appears in the sceptic's arguments. Thought is assumed to be second in knowledge, and not first; and then being is allowed to

challenge thought to know it. But in knowledge, being is second and thought is first. Being appears as an hypothesis, or as posited by thought to explain our rational experience. But we should explain nothing if we posited something out of all relation to intelligence, or which cannot be grasped by intelligence. We should have merely the form of affirmation, and perhaps a swelling sound, but both would be empty of the slightest substance. We object, then, to the absolute which eludes all rational determination as we did to the thing in itself, not that it is unknowable, but that it is rationally unaffirmable. In the nature of the case, proof of its existence can never be forthcoming. Thought, then, though subjective, may comprehend being, because the latter must admit of rational determination, if it is to be affirmed at all.

Again, we have seen that the subjectivity of knowledge is true for all intelligence, and does not hinder that there may be a universal element in knowledge so that we may grasp the common to all as well as the special to us. Indeed, the relativist's argument, if good for anything, would apply, first of all, to our certainty that knowledge has any validity beyond the individual. It would limit the knower strictly to what is special to himself. It is impossible to stop with the maxim that man is the measure of all things; we must go on to the affirmation that every one makes his own truth and error. But if we may transcend our own individuality in knowing, and discern the common to all men, there is no reason why we might not discern the common to all intelligence. Whether this detection of the universal is possible can be decided only by an appeal to consciousness, or by an inspection of the content of knowledge. If such inspection reveal the presence of universal elements, or of elements which claim to be universal, it will then be the duty of the relativist to bring reasons for limiting this universality. He must justify his doubt, if it is to have any significance. The mere assurance of one speculator is as

good as that of another, and counts for nothing in any case. The general subjectivity of knowledge is no reason, as that would still be true, even if knowledge were universally valid. But the argument with the relativist cannot begin until we have first separated the universal from the special. It cannot, then, precede metaphysics, but must follow.

Moreover, if it were true that our conceptions are valid only for human thought, there would still be need of metaphysical discussion. One great spring of philosophic study is the need of bringing the mind into harmony with itself. Mental discord and contradiction we cannot endure. It is not the lack of harmony between our conceptions and reality which disturbs us, but their discord among themselves. Hence, until our thought-life ceases, there will always be an attempt on the part of the mind to bring its conceptions into a consistent system. Our conceptions may be purely phenomenal; but none the less will the mind demand that they be harmonized with one another. The importance and the justification of metaphysics are not dependent, therefore, on the falsehood of the philosophy of relativity. Metaphysics finds its warrant in the mental demand for harmony in thought. Now these fundamental notions of being, cause, change, space, time, etc., do enter into our thinking, such as it is; and we are justified in asking what meaning they have in reflective thought. When we use these terms, we ought to mean something, and it must be possible to tell what we mean. But we have seen that these words are often used without any definite or consistent meaning. Apart, then, from any question of universal validity, we must seek to bring the mind into harmony with itself; and we can do this only by rendering these fundamental notions more precise, and by so determining their content that they shall be consistent with one another, and equal to the function they perform in our thought-system.

But, granting the admissibility of the problem, how shall

it be solved? Locke claimed that philosophical study must begin with an inquiry into the origin of our ideas. If we would know what our ideas are worth, we must know how we came by them. Kant also taught that a criticism of the faculty and process of knowing must precede metaphysics. At present, when philosophy is identified with empirical psychology, if not with physiology, any other method seems entirely hopeless. We ought to begin, then, with psychological investigation, giving due attention to the marvels of the associational psychology, if we hope to reach any sound conclusion. In spite of this recommendation, however, we regard this method as utterly inverted and worthless. The origin and history of an idea do not decide its significance and validity after it has arisen. Its validity must be determined solely by its content and by the self-evidence with which that content is thought. Thus the genesis of the space-idea decides nothing as to the truths of geometry. This idea may have a history which the psychologist can clearly trace, and it may be conditioned by a variety of physiological factors; but, still, this genesis does not help us to decide as to the validity of geometrical truth. This must be determined by the nature of the propositions and by the self-evidence of their content. The same is true for the idea of number. This idea may be slowly developed, and may be developed only under certain conditions which psychology may discover. But the truth of numerical relations is, in every case, independent of the psychological processes by which we come to recognize them. The principles of causation and the continuity of being may also be long in winning recognition; the ideas may be of slow growth; but when the ideas come, their validity can be decided only by reflection on their content, and the evidence with which they appeal to the mind. After a belief is found to be groundless, then the psychological account of its origin is in order, and has a certain interest; but before this time it is philosophically irrelevant. Misconception on this

point is as common among the intuitionists as among the empiricists. The former think that a proposition is placed forever beyond the reach of attack when it is shown to be innate; as if the innate must certainly be true. Indeed, the empiricists themselves agree with the intuitionists on this point. Mill, in his "Examination of Hamilton," admits the infallibility of primitive beliefs, but raises doubts as to what beliefs are truly primitive. He thinks that if we could look into the mind of the baby, as it lies in the nurse's arms, we should get the original philosophic revelation. Others, again, haunted by the notion of heredity and evolution, are at a loss whether to look for this original element in the first polyp or in the primal star-dust; but all alike are agreed that, if we could reach it, we should get at indisputable truth. But this is plainly a mistake. It is not self-evident that the innate must be true. It is not self-evident that the baby, or the polyp, or the ancient star-dust is a spring of pure and undefiled knowledge. Hence, after a proposition has been shown to be innate, the question of its truth remains open; and this question can be answered only by looking away from the psychological question of origin to the philosophic question of the grounds of the belief. Indeed, it would be hard to find a doctrine so out of harmony with every one of the current tendencies of thought than this one, which seeks for truth in the raw rudiments of consciousness rather than in its full manifestation. Every conception of progress, every form of evolution, every analogy of nature point rather to the opposite view—namely, that our faculties are most trustworthy in their developed form, and not in their crude beginnings. In short, if there is to be any knowledge and any philosophy, it must be on the basis of our faculties as they are. Even the empirical philosophy is not so self-evident as to dispense with proof; and its truth or falsehood can be determined only by an appeal to the reason that is now in us, no matter how it got there. It may be that empiricism, strictly constructed, casts

doubt on the reason to which appeal is made, but the system itself cannot allow this without self-destruction. If, then, the empiricist or associationalist is not to play the part of the utter sceptic, he must admit that the validity of a doctrine is not to be tested by its genesis, but by its grounds. But if he should choose to play the sceptic, then his scepticism must be extended to his own system; for, as said, empiricism is not a self-evident system, and, therefore, it must be proved. But this proof can be on the basis only of those principles and faculties which it aims to discredit. It would thus be a system which could not become strictly true without becoming absolutely doubtful. Every system which discredits first principles is in this dilemma. If such a system were demonstrated to be true, it would at once become demonstrably doubtful. Hence, while the study of the genesis and history of our ideas has a psychological interest, and is also of great value in enabling us to understand the origin of discovered prejudices, it can never claim to decide the validity of first principles without destroying itself. This must always be a philosophical question, and not a psychological one. Hence, the first question in philosophy is not the origin of ideas, but the clearness of their content and the consistency of their relations. Theories of knowledge in general are answers to the question, How is knowledge possible? They are irrelevant to the more fundamental question, Is knowledge possible? Their value consists in giving a theory of a process already familiar, and in unfolding the postulates of that process.

Only those familiar with the usurpations of empirical psychology will understand our prolixity on this point. But the mischief wrought is so great as to warrant another paragraph. A belief may be viewed in two ways.* It may be regarded as an effect produced by causes, or as a conclu-

* This distinction has been developed at length, and with great force, by Arthur Balfour, in his "Defence of Philosophic Doubt."

sion deduced from grounds. Very many of our beliefs are effects, and not conclusions. They are produced in us, and not deduced by us. Probably all our beliefs are, to some extent, products. This is strictly the case with the average natural man. His beliefs are effects, and not deductions. But if a belief is to have any value in a rational system, it must be more than an effect; it must also have rational grounds. Hence, after a complete study of beliefs as effects, or as simple facts, the grounds of belief remain for investigation. The question, then, of the causes of belief is entirely distinct from the question of grounds. The former belongs to psychology, the latter to philosophy. Only in one case can the two questions come into contact, and that is when the theory of causes is such as to exclude all grounds. It may be that, in strictness, the empirical philosophy does precisely this; but no empiricist can allow it without cancelling his own system. For this system, as well as others, is a set of beliefs with a certain genesis and history; and hence, if the study of antecedents dispenses with any inquiry into the grounds, we could only conclude that this system, as well as others, is groundless, and has no more claim, in reason, to acceptance than any other superstition. The empiricist, of all speculators, is bound to admit the distinction between the causes and the grounds of belief as of the highest philosophical importance. The great objection brought against him by his opponents is, that his theory of causes leaves no room for grounds; that he analyzes all beliefs into effects, and thus empties them of all rational significance. These objections may be well taken; for the present we decide not. Our aim is to show that the empiricist's attempt to test beliefs by their history and antecedents is a contradictory one when applied to first principles, and a mistaken one in any case. As applied to first principles, it results in throwing doubt upon the principles of all investigation, while, as such principles, they must be above all suspicion. As applied to other matters, it gives us history instead of

philosophic criticism. But, we repeat, a conception is not to be accepted or rejected because of its history, but because of the strength or weakness of its grounds. The philosopher cares nothing about what men believe; he seeks, rather, to know what grounds they have for their belief. Hence the only propositions which can lay claim to philosophical acceptance are such as are self-evident, or are deduced from others which are self-evident. If philosophy be possible at all, it can be on the basis only of self-evident and reasoned propositions. But this self-evidence and the soundness of the deduction can be tested only by direct appeal to the reason within us. Men may differ as to what is self-evident, but all must agree that, if philosophy be possible, there must be self-evident propositions at its foundation. For some empiricists the truth of empiricism will be a self-evident proposition. To others, the infallibility of baby-consciousness, or of the primal star-dust, will be a first truth. If star-dust takes to thinking, its thoughts will be above dispute. The materialistic empiricist will view the parallelism between the motions of matter and the resulting thought as unquestionable. There is no start possible without some proposition which commands assent by virtue of its own self-evidence.

It is a matter of history, and not of opinion, that this distinction between the causes and the grounds of belief has been almost entirely ignored, or, rather, undreamed of, in English philosophy in recent times. On the one hand, fancy has run riot in doctrines of heredity and mental evolution, and, on the other, a plodding misunderstanding has ground away at the associational mill, and all concerned have imagined that philosophy was marching on. Indeed, various "epoch-making" works have been produced, and still more have been predicted. Meanwhile not a glimmer of philosophic insight can be discovered in the dreary product. If the philosophic validity of the belief in causation is in question, the debate switches off forthwith to the ques-

tion of origin. Of course, the law itself is assumed throughout the explanation; and when, by aid of the law, the belief in it is explained, the impression prevails that philosophy has progressed. When Mill comes to discuss with Hamilton the existence of an external world, the first and only thing is to give a psychological explanation of our belief in an external world; as if this were the question in dispute. The manifold assumptions of an external world which occur throughout the argument all serve to give the "psychological theory" greater plausibility, though at the same time they deprive it of all philosophical significance. In ethics, psychology has seized on the entire science. The origin of conscience and of moral distinctions appears to be the only possible question; whereas it is not a question of ethics at all. Ethics deals with duty, and the question whether there be any duty can be answered only by an appeal to the reason that is within us. The study of whipped curs may possibly throw some light on the genesis of moral ideas, but it can do nothing towards deciding their obligation.

What, then, is our method? It is plain that every philosophical inquiry assumes a certain trust of reason in itself. This is a universal fact of mind, and hence a fact of the system of which we form a part. This self-confidence of reason is not to be groundlessly distrusted, both because such distrust would be irrational, and because it would forestall all investigation. In discussing our theory of things, we propose, therefore, to take everything as it seems to be, and to make only such changes as are necessary to bring our views into harmony with themselves. The reasons for doubt and modification are to be sought entirely in the nature of the object, and not in the possibility of verbal doubt. Such a method does no violence to the natural sense of probability, which can never be needlessly violated with impunity. Such a method, too, allows reason its full rights. It is an act of faith, and not of scepticism; for it makes no

changes unless reason calls for them. If we distinguish between appearance and reality, it is because reason can be harmonized with itself in no other way. We take, therefore, the theory of things which is formed by spontaneous thought, and make it the text for a critical exegesis, in the hope of making it adequate and consistent. We take the notions of common-sense as they exist, and the functions ascribed to them, and change them only as reason itself prescribes. Our only assumption is a provisional trust in reason; but we by no means assume that inquiry will leave our general views unchanged. Nor is our problem any more speculative than are the theoretical problems of physical science, while the method is the same in both cases. Physics, going out from phenomena, asks how we must conceive of the unseen agent, or agents, which produce them. Accordingly, it posits atoms, ethers, etc., of various kinds and powers. Indeed, theoretical physics is metaphysics, as far as it goes. And the physicist carries himself beyond the phenomena by the sole force of reason. He has no other criterion of truth in this unseen realm than the mind itself. He enters it only by thought, and thought is the only warrant for its existence. We go to work in the same way, and appeal to the same standard. We use, therefore, no new method, and appeal to no occult authority.

This thought deserves further emphasis. Oversight of it is at the bottom both of the popular notion that philosophy leads to scepticism, and also of the popular scepticism of philosophical conclusions. Neither science nor philosophy denies anything which the senses give; though both find reason for denying that the senses give as much as uncritical thought assumes. Both make the data of the senses their starting-point, and on them they build up a rational system. But this system is never a matter of the senses, but an inference from their data. Both physics and metaphysics carry us at once into a world of realities whose existence can be assured only by thought. The conclusions

of physics concerning the true nature of things are most startling, and at first sight seem to outrage all reason. The clod at our feet, or the solid rock on which we tread, is the scene of incessant activity. We are ourselves immersed in an ocean of throbbing ether; and without there is neither light nor sound, but only ethereal or aerial vibrations. If we shut our eyes, and try to realize it, we are almost suffocated. We open our eyes, and feel like rejecting the theory as a mental nightmare. We see the light and hear the sounds of the world around us. Of course we do; no one ever dreamed of denying it. These theories, which seem so monstrous when tested by the senses, are not to be tested by the senses, but solely by the reason. They deny nothing which the senses give, but are inferred from the data of the senses. Our trust in them, therefore, depends only upon our trust in reason itself, and on the cogency with which they are inferred from the data. In like manner the astronomer proposes a theory of the earth and heavens which seems to do violence to the plainest teachings of the senses, but, upon reflection, it becomes clear that the astronomical heavens and the visible heavens are not properly contradictory. The astronomer makes the visible heavens his starting-point; and he finds that the visible heavens force us to affirm the astronomical heavens. The visible heavens are the heavens as they appear to the eye; the astronomical heavens are the heavens as they appear to the reason. Each view, in its place, is correct, and neither denies the other. But if the boor should attempt to demolish the Copernican theory by appealing to the senses, no one would pay any attention to him, for every one now recognizes that the senses have no jurisdiction in this matter. Reason only is competent to a judgment; and if the theory were overthrown, it would only be as reason showed that the phenomena are susceptible of another and more rational explanation.

Now, in judging of philosophical doctrines, it is of first

importance to bear in mind this distinction between phenomena and inferences from phenomena, which we have illustrated at such length. The senses have the same function in philosophy which they have in science—namely, to furnish the raw material for the mind's activity. Philosophical theories, like scientific theories, are not to be judged by the senses, but by reason only. As it is no objection to physics and astronomy that the atoms and the ether cannot be seen, or that the heavens seem to contradict Copernicus, so it is no objection to philosophy that its theories cannot be verified by the senses. They are never matters of eyesight, but of insight. Philosophy is always ready to consider objections against the justness of its inferences from phenomena, but objections based only on the senses themselves it treats with the same disdain with which an astronomer would listen to an attack on the Copernican theory based on its opposition to appearances. In one sense, philosophy is a war against the senses; and in this sense no one can be a philosopher until he gets out of his senses. Philosophy first attempts to reduce the senses to their true place by rooting out the uncritical prejudices which make up the bulk of our spontaneous thinking; and when the senses are properly limited to appearances, philosophy seeks to press beyond the sense-system to a rational system, which shall express the true nature and relations of things. Viewed in this light, the crude hypotheses of the early Greek philosophers were epoch-making in the history of thought; for, puerile as the theories themselves were, they first gave voice to the demand for unity and rational explanation in nature. They were declarations that the senses are limited to appearance, and that reason only can penetrate to the reality of things. If, then, in the following discussions, many things are found which are violent and even monstrous paradoxes, when measured by the standard of the senses, the reader is begged to remember that we do not recognize that standard as a measure of rational truth, any more than

the physicist recognizes it as a test of his theories. If the conclusions are soundly inferred from admitted premises, they must be allowed, no matter what bends or breaks.

There is, then, a distinction between phenomena, or reality as it appears to the senses, and noumena or reality as it appears to thought; but these two are not properly contradictory. Phenomena are the basis of our knowledge of noumena; and noumena are inferred from phenomena. It has been claimed that noumena are essentially unknowable. This claim taken literally would mean that we do not know what we think. It may further mean that we cannot comprehend the possibility of existence; and in this sense the claim is true. But we may know many things as facts which we cannot construct or deduce. Ultimate facts can never be comprehended, they can only be recognized and admitted. In this sense the claim is a truism and irrelevant to our purpose. Finally, the claim may mean that phenomena allow so many interpretations that no consistent and necessary thought-system can be deduced from them. But this claim can be tested only by trial. It is also said that noumena, as well as phenomena, are subjective. Both alike represent, not the reality, but only its appearance. The latter give reality as it appears to the senses; and the former give it as it appears to thought. In this extreme sense of the word, it is true that we know only appearances; but the admission is without significance. It is only another form of the universal subjectivity of knowledge, or of the fact that the mind can never transcend its conceptions and deal with its objects except as thought. Finally, phenomena have sometimes another meaning than the one here given. The activities of things are spoken of as their phenomena; and even mind is said to have its phenomena. Taken in this sense, the claim that we know only phenomena means only that an unmanifested thing could not be known. But the ordinary distinction between phenomena and noumena is that given in the etymol-

ogy of the words themselves; and it is in this sense that we use it.

In accordance with our definition of metaphysics, our work will be critical, and not creative. We begin with the given, and ask what changes the reflective reason calls for in order to reach a consistent interpretation. The philosopher has no recipe for creation, and cheerfully admits that, if reality did not exist, he would be sadly at a loss to produce it. Being is a perpetual miracle and mystery, which logic can never deduce. It is something to be recognized and admitted, rather than deduced or comprehended. We aim not, then, to tell how being is made, or how it is possible, but how we shall think of it after it is made. Not to create, but to understand reality, is the highest possibility of human thought. Neither the attempt nor the problems are new. It will not escape notice that our conception of metaphysics is identical with that of Herbart, who defined it as "the working-over of the notions." And since the time of the Eleatics, 500 B.C., the need of this working over has been felt. And as our most fundamental thought of reality is that something exists, we begin with an exposition and criticism of the notion of being.

Part I.

ONTOLOGY

PART I.—ONTOLOGY.

CHAPTER I.

THE NOTION OF BEING.

Being, reality, existence, are words of many meanings. In their common use, they are not limited to the substantial, but are affirmed of thoughts, feelings, laws, relations, as well as of things. The thought we think is real in distinction from others which we do not think, or from others—such as contradictions—which cannot be thought. Hence a real thought may variously denote either a mental act, without regard to its object, or a right conception of a real object, or simply a logical possibility, that is, any conjunction of ideas which the laws of thought do not forbid. So, also, we speak of existing laws and relations as real in distinction from others which, as imaginary, are unreal. In its widest sense, being is affirmed of every object of thought; in its metaphysical sense, it applies only to substantive things. Thus it appears that there are various kinds of reality. Laws, relations, events, are real, but never in the same sense in which things are real. It is important to keep this distinction in mind, and to remember the kind of reality which is possible to any given object of thought. Neglect of it has been the fruitful source of logomachy and frivolous discussion in the history of philosophy. And, obvious as the distinction seems to us, yet the human mind has

reached it only through great mental tribulation. In the early Greek philosophy, especially, a great part of its confusion and apparent sophistry can be traced directly to overlooking the various meanings of being or reality. All realities, then, are not real in the same sense. The reality of a feeling is in being felt; that of a thought is in being thought; that of a law is in its ruling; that of a truth is in its validity. The question which metaphysics proposes is, In what does the reality or being of things consist?

This question admits of easy misunderstanding. It may seem that our aim is to construct being; but this misconception has been warded off in advance. The aim is, simply, to find what we mean by being, or to find what conditions a thing must satisfy in order to fill out our notion of being. How it satisfies them is the fathomless mystery of existence; but it is competent to thought to ask what they are. And, first, we point out that the content of this notion cannot be determined by any process of logical abstraction. The notion of pure being which results from this process is, like all general notions, incapable of real existence. Concepts are formed by abstracting the common factor or factors in a multitude of individuals, to the exclusion of all unlike elements. Thus they become mere symbols or frames of thought, or short-hand expressions, like the algebraic signs. As such they have an important function in our mental life, and thought could not go on without them. At the same time, they are incapable of objective existence; and often, indeed, they contain incompatible determinations when viewed as realities. Thus, the concept of a triangle is that of a plane figure bounded by three straight lines. The common factor in all triangles—that of being bounded by three straight lines—is all that appears in the concept. It abstracts from the lengths of the sides and from any particular relations or magnitudes of the angles. The concept, then, represents neither a large nor a small triangle as such; it is neither acute, right-angled, nor ob-

lique, but stands for all alike. This, however, is not possible in reality, but only in thought. Every real triangle must have sides and angles of definite magnitude and ratios, and it must belong to some one of the classes mentioned. The same is true for all logical concepts. They are contradictory when viewed as real existences. The universal man, who is neither white nor black, neither tall nor short, neither young nor old, does not, and cannot, exist. The universal horse does not run. The universal color cannot be seen. Motion in general is impossible. The reality is always a number of individuals, each of which, in addition to the class characteristics, has specific determinations whereby alone it has reality. Hence, in passing from the concept back to reality, we have always to supply the factors left out in forming the notion; and until this is done, we have a form of thought only, and not a fact of objective existence. It is with concepts as with algebraic formulas. These abstract from any definite quantity, and deal only with the relations of different quantities. In this way one may obtain results valid for every case of certain class; but always, in order to apply the formula to any actual case, one must replace the general quantities by specific values. When this is done, the formula ceases to be general, and becomes a real case, which, as such, must be specific and particular.

The nature and function of logical notions are now generally understood, and there is no longer any danger of falling back into the old realism. The individual is no longer an accident of the universal, but the realization of the universal. But an exception to this insight must be made in a single case. In the notion of "pure being," we have a relic of realism, or a mistake of a logical concept for a real existence, which still haunts philosophy. This pure being is viewed as without distinction or quality of any kind, but is alike in all things. It is easy to see how speculators have come to this notion. Logically considered, every object is a determination of the notion of being. Being

appears alike in all, and the difference and determination are found in the attributes. Logically, then, every object is an accident of being; it is a determination of the general notion to a particular case by means of some specific mark. From this point it is easy to imagine that there is some element of real being which is common to all objects, and which, by receiving particular determinations, becomes the particular and specific thing. As this being exists in itself, it is pure and universal; and, as such, it is the necessary presupposition of all definite and particular being. The fallacy would be palpable in the case of any other notion than this of being. No one would say that pure motion first exists as the element common to all specific motions, and then, by receiving specific velocity and direction, becomes specific motion; and yet pure motion is just as possible as pure being. If one should claim that pure motion is the necessary presupposition of all specific motion, the mistake would be detected at once; but, owing to certain illusions of the senses, we do not so readily detect the error in the case of pure being.

We must make this point clear to ourselves, even at the expense of tedious repetition. In dealing with universals, the order of thought reverses the order of fact. The thought of the particular is possible only through the universal; but the universal is real only in the particular. The first fact has been expressed in the doctrine that all cognition is classification, or that nothing can be known until it is recognized as one of a kind. This fact is well adapted to lead us to overlook the fact that the universal is realized only in the particular. But whatever exists in reality must always be something specific, and not logically universal. Just as a real triangle must always have definite angles and sides, so every real thing must have definite properties. The indefinite triangle is no triangle. A triangle may be indefinite in knowledge, and then it is a problem for solution; but while our knowledge is indefinite, we still posit the triangle itself

as completely determined. So, also, a thing may be indefinite in knowledge. All we know may be, merely, that something exists. In such a case the thing presents a problem, and we seek to solve it by discovering the unknown qualities of the thing. But, upon reflection, it becomes clear that the thing itself is definite all the time. Hegel was quite right in saying that pure being equals nothing; for its definition, as without definite power, quality, or relation, is the exact definition of non-existence. The notion of pure being, then, may be allowed as a logical concept; but, like all other concepts, it must be restricted to an ideal existence. Only the definite and specific can exist in reality.

This notion of pure being as an objective fact has received further support from the general tendency to mistake the movement of our thought for a movement of objective being. We have already pointed out that every object is, logically, a determination of the notion of being; and it is very easy to mistake this determination in our thought for a process in the thing. But a very little reflection serves to show that many movements of our thought are without any double in the world of objective being. They are but the subjective devices by which the mind seeks to master the independent fact. Of course, if thought is to grasp reality, it must have an essential relation to reality; but this relation cannot be an identity of process. By means of the syllogism, the human mind can trace the course of things; but that course itself is not syllogistic. Thus, in analytics, one can get the equation of a curve in terms of Cartesian, or polar, or quaternion co-ordinates. The several equations would be totally unlike, and yet one could develop from each the true properties of the curve. The co-ordinate system is but the scaffolding by which we climb to the desired knowledge, and in itself it is not represented by anything in the curve. Now the movements of thought by which we seek to grasp this objective fact have mainly this character of subjective scaffolding, and they must not be viewed as movements of

the thing without special proof in each case. Oversight of this fact has led to a confusion of the development of knowledge with a development of being itself, and thus the notion of pure being has received further support. In knowing, we begin by positing a thing as thing, and then we seek to determine its attributes. The two operations may be simultaneous, but often we know only that something is. When posited simply as existing, its being is for thought almost "pure;" and when, at a later period, its qualities are determined, it becomes for thought definite and determined. But this process describes nothing in the history of the thing itself. It is not the thing, but our knowledge of it, which develops from the indefinite to the definite. Herbart's doctrine of being as "absolute position" seems to rest mainly on the same confusion of our thought of the thing with the thing itself. It is true that, in knowing, we first posit a subject, and then pass to fix its attributes; but the subject is not posited as indefinite, but only as indefinitely known. It is thus a problem to be solved; but all the unknown quantities have definite values. What Herbart says of being as "absolute position" is true only of being as concept. The concept is pure affirmation or position, without restriction or qualification of any sort; but whenever any real thing is posited, it must be a position of something specific. Otherwise the position is empty, and nothing is posited. The purity cancels the reality of the act. The pretended development of being in the Hegelian philosophy is, also, only a development of our thought about being, and the latter is mistaken for the former. It will help us in guarding against this delusion of pure being to remember, (1) that the predication by which we make objects definite for our thought corresponds to no process in being; and, (2) that predication itself assumes that the object is already definite. It aims to tell what the object is, and not to make it.

The notion of pure being must be rejected as incapable

of real existence. It must further be rejected as useless, if it could exist. The notion of being, when found, must be adequate to the demands made upon it. But being is the fundamental fact or notion, and, as such, it must contain the ground and explanation of all manifestation. That which appears must be explained by that which truly is. Hence we must have constant regard to the conditions of the problem, or a true solution will not be reached. It is not enough that the notion of being should be logically consistent; it must also include in itself the ground of all manifestation. There is no logical contradiction in supposing a world of unrelated and incommensurable things; but such things would be indifferent, and hence would contain no explanation of the world of interaction. They would form no system; for each would be indifferent to all the rest. There is, also, no contradiction in conceiving being as changeless and inert; but there is a contradiction in supposing that such being would explain anything. The real world is one of motions, changes, and interactions; and the being or beings we plant at the bottom must be capable of fitting into and explaining these changes and interactions. Any other conception of being would be gratuitous and useless. Here is where the Eleatics failed. They overlooked the conditions of the problem, and defined being as something unitary, motionless, and unchanging. But the actual world manifests plurality, and a constant entrance and exit; and the Eleatics, to save their definition, were forced to declare the whole phenomenal world to be an utter delusion. Thus, alongside of the world of being was posited a world of non-being, which, after all, had a sort of being. And even this heroic step was not enough, for the delusion must be accounted for. Since being is one and changeless, how could the delusion of plurality and change ever arise? The existence of the delusion, even as delusion, is incompatible with the fundamental principles of the philosophy. Again, since being does not explain the delusion, the delusion is no

longer any ground for affirming being. The phenomenal world, then, must be retained, and the changeless being must be renounced. Heraclitus, on the other hand, was so impressed with the fact of change that he denied the existence of any constant factor in being, and declared that all things flow. But this doctrine is intelligible only because it is false; for flow could never be known as such apart from a constant factor which abides across it. The Greek atomists, also, failed to observe the conditions of the problem, and were equally unsuccessful in finding an adequate definition. They regarded the atoms as the only realities; but they viewed them as self-existent and mutually independent. This definition is borrowed entirely from the illusions of sense-experience, and becomes a contradiction when the atoms are viewed as forming a true system. As independent, they must be unrelated and indifferent; and hence they contain no account of the interactions and interdependencies of the actual world. The independent individuality excludes the community necessary to a system. In modern times this error has been repeated by Herbart, who has united atomism with the Eleatic philosophy. He posits a number of simple, changeless, and essentially unrelated beings; and it is only by logical inconsequence and violence that he even seems to explain the real world. The same oversight often appears in the modern atomic theory. The element of relation and interdependence is overlooked, and the atoms are viewed as self-existent and independent. Thus the error of the Greek atomists is repeated, and the atoms are made useless for scientific purposes. For not atoms in general, but only interacting, interdependent atoms, are of use in scientific explanations.

This necessity that being shall be so conceived as to explain all manifestation sets in a still clearer light the emptiness of the notion of pure being. Being, as indefinite and undetermined, contains no ground for the definite and determined manifestation. As totally indefinite, there is no reason why

it should act rather than not act; and if it should act, there is no reason why it should act in one way rather than in another. There is neither motion nor progress nor direction in it. If the notion of pure being represented a possible existence, the only formula into which it could enter would be, One times one is one; and out of this no advance could be secured. In strictness, pure being, as indefinite, could not enter even into this formula; for A = A supposes that A is definitely A, and not X. Hence being cannot be viewed as first existing as pure being, and then as giving itself determinations; for if it did exist pure, it could never attain to definite determination. It is a necessity of thought, that the definite can proceed only from the definite, and that the indefinite can found nothing. To deduce motion from rest, being from non-being, or anything whatever from its opposite, is no more impossible than to deduce the definite from the indefinite.

This truth is self-evident. No argument is needed to establish it, but only an understanding of the terms. And yet, owing largely to the delusions of the senses, this notion of pure being has had a great and pernicious influence in philosophy. We find it underlying the distinction of matter and form in the early Greek speculations. Matter in itself is formless and powerless, and only one step from non-existence. Form, on the other hand, is empty and bodiless. But matter, though powerless, has a mystic power of filling out form and stiffening it into reality; and thus, by the union of the two, definite material existence is produced. Plato, also, conceived of things as produced by the union of the idea with indefinite existence. Through the idea, the bare being became something; and through this being the idea became more than an idea—a thing, as well as a thought. In both of these views we have a certain division of labor. The idea, or the form, provides for quality and determination, and the being provides the reality. The idea is the mold; being is the filling. The idea is the

plan; being is the raw material which is wrought into the plan, and thus lifts it into reality. The crude and false analogy of our daily experience is manifest, and the impossibility of this division of labor is equally so. The idea, the great source of definite determination, is left unexplained; and, if it were accounted for, the formless being could not perform the function assigned to it. The appeal to experience is short-sighted. Our own plans, which we impress upon matter, are, indeed, external to it; but matter is able to fall into the molds of our thought only because of certain definite properties and laws of its own. If it had no forces of attraction and resistance, whereby it retains its form and resists change, it could not be built into our plans. The matter we employ is not indefinite in itself, but only in reference to our purposes or to our perceptions. Yet this indefiniteness relative to us we mistake for an essential indefiniteness of the thing, until we see that the use we make of any, even the most unformed, material, depends always on certain definite properties of the stuff employed. This fancy of a formless, but plastic stuff, which barely exists, haunts, indeed, our sense-bound imagination, but reflection serves to exorcise it.

Nor is the idea confined entirely to ancient speculation; it constantly reappears even in modern thought. The infinite substance of Spinoza is an example. At times, indeed, he speaks of this substance as having infinite positive attributes, but at other times he presents it as the purely indefinite and undetermined. His guiding principle, that all determination is negation, forbids any other conception of the infinite. It can be everything only on condition of being nothing. The absolute being of Schelling, and the absolute idea of at least some of the Hegelians, are but new forms of the old thing. The philosophy of the unconditioned is of the same kind. The unconditioned is supposed to transcend all likeness and all difference. It is simple absolute reality, without limitation, and hence without determination of any

kind. But this is the old abstraction in a new form. That it is unknowable need not occasion us the least distress; for it is as unreal as it is unknowable. The current distinction of matter and force is another example. Matter, in itself, is viewed as inert and undifferentiated; and it becomes active and different only through force. Most of the current theories of evolution are built upon the same notion of pure being. They all alike assume that indefiniteness was first, and founded definiteness; indeed, the most ambitious exposition of the doctrine assumes that the only function of philosophy is to trace the genesis of the universe as a passage from the homogeneous and indefinite to the heterogeneous and definite. Pure or indefinite being precedes and founds all definite existence, and philosophy has only to trace the process. The physical philosophy of the Spencerians is identical in aim, and almost identical in method, with the idealism of the Hegelians. The same conception of pure being appears often in theology, in distinctions between the divine being and the divine existence, and in attempts to found the living God on something deeper than his own living reality. The divine being is spoken of as the abyssmal, undifferentiated absolute, which is at once all and nothing; while the divine existence is the standing forth in definiteness of the essentially indefinite being of God. But in all these cases we meet the same logical difficulty. The definite cannot be deduced from the indefinite. A definite conclusion can never be deduced from indefinite premises. The indefinite founds and leads to nothing, and is itself nothing.

Nothing but the persistence of this notion could excuse any further reference to it. But not only is it the foundation of the most ambitious of current philosophic theories, but a great cloud of illustrations are given in support of it. All progress is declared to be from the like to the unlike, or from the indefinite to the definite, through continuous differentiations and integrations. It is necessary, therefore,

to show that none of these illustrations illustrate. When the apparently unorganized contents of an egg develop into a chicken, the progress from the indefinite to the definite is only in appearance. The egg is a perfectly definite compound of perfectly definite chemical elements, with perfectly definite forces and laws, and in perfectly definite relations of interaction with a perfectly definite universe. And when this perfectly definite complex of definite elements passes into other forms, it becomes no more definite for reason, but only for the senses. The entire progress is from definiteness which only reason can perceive to definiteness which the senses can perceive. A similar criticism applies to the claim that, on the nebular theory, we have in the solar system an advance from the indefinite to the definite. Here, again, the growing definiteness is purely phenomenal, or for the senses, and has no application to the elements which conduct the process. No physicist doubts that, in the nebulous period, the laws and forces of the elements were as mathematically definite as they are at present. In the most vaguely outlined cloud he finds the same fixity of law and rational relation which exists in the most sharply cut crystal. The difference is for the senses, and not for reason. The evolution formula, that all progress is from the indefinite to the definite, applies only to appearances, and not to the realities which underlie them. The irrelevancy of the illustrations drawn from the possibility of using the same stuff to make various things has already been referred to. The mistake consists in mistaking the indefiniteness of matter with reference to our plans for an indefiniteness in itself; whereas, it is only by virtue of its own definite properties that it becomes usable by us. It must also be noted that none of the attempted evolutions of pure being have ever succeeded in keeping it pure. Schelling attempts to explain the world of matter and mind by the absolute, which is the pure identity of subject and object. But from pure identity there is no way to difference;

and thus, at last, he is forced to posit in this identity a "dark nature-ground," which, in some unexplained way, fell out of the absolute into being. Spencer's indefinite and homogeneous, also, ought to lie beyond all law, difference, or antithesis; but when we make our first acquaintance with it, it already presents the antitheses of matter and force, of attractive and repulsive forces, and, commonly, it is already atomically discrete, and in all cases the reign of definite law is assumed as self-evident. Such contradictions are necessary in the nature of the case. No process of reasoning can ever deduce a definite conclusion from indefinite premises; and no mind will ever find an explanation of a definite outcome in positing an indefinite antecedent.

Thus, whichever way we work it, the notion of pure being appears untenable. When, from the side of the definite, we attempt to reach the indefinite, we violate the law of the sufficient reason which demands in the cause some determining ground for the specific character of the effect. On the other hand, when, assuming the indefinite, we attempt to reach the definite, we find no passage whatever. It founds nothing, and leads to nothing. Not only is it indistinguishable from the void, it is the void, the non-existent.

But the result of the previous discussion is more negative than positive. We learn that being must be conceived as something definite and specific, but we have no insight into the specific content of the notion. What, then, is being? It is often defined as substance or substratum. It is that which has or supports qualities. But such definitions are purely formal, and do not tell how this substance must be conceived, in order to make it adequate to its function. We shall find it well to shift the question a little, and ask what we mean by predicating being of things. It may be said that being is a simple idea, and admits of no explanation. But if we allow this, there must always be some

ground for saying that a thing exists. If, then, being and non-being were perfectly undefinable notions, there must still be some mark by which we distinguish one from the other; otherwise, there would be no more ground for saying that a thing exists than for saying that it does not exist. Common-sense would, at first, be tempted to find this mark in sense-phenomena. The real is that which can be seen or touched. But common-sense would quickly perceive the untenability of this view, and the idealism implied in it. Common-sense holds that things exist when unseen and untouched, and that many things exist which can never be seen or touched. Nor would common-sense be content to put the existence even of sensible objects in their permanent perceptibility by every one under the proper conditions. A permanent and regular possibility of phenomena is not what common-sense means by a material object. It holds that perception recognizes rather than makes things, and, hence, that their being is more than their being perceived. But all this only makes it the more important that we should know what is the distinguishing mark of being. Since this mark cannot be found in sense-phenomena, it must be sought elsewhere; and, after much casting about in thought, it appears that the distinctive mark of being consists in some power of action. Things, when not perceived, are still said to exist, because of the belief that, though not perceived, they are in interaction with one another, mutually determining and determined. Things are distinguished from non-existence by this power of action and mutual determination. When this is omitted from our thought, the affirmation of their existence is perfectly meaningless, as well as groundless. The things said to exist might, in that case, with equal propriety, be said not to exist. In speaking of pure being, we said that only the determined can exist; we must now supplement this by adding that only the determining has existence.

We reach this conclusion as the only means of saving

ourselves from Berkeley. We reach it equally by observing the function of the notion. Being itself is no fact of experience, but rather a mental datum. Experience reaches only to phenomena, and being is posited for their explanation. But the phenomenal world manifests incessant change and movement; and if we are not content to rest in the thought of a groundless show, we have to supplement these changes by the notion of an agent or agents which cause them. Actor and act are the two basal categories of thought, and when we have referred a phenomenon to its cause or causes, we have explained it. Hence those things which we posit to explain the phenomenal world must be viewed as its active ground. When we grasp this fact, it becomes clear that being must be viewed as essentially active; for any other conception makes it inadequate to the facts. We get no insight into action by positing the inactive, and we get no insight into the nature and changes of the phenomenal world by positing a ground of being which does nothing. However thick the mental fog may be, it must always be plain that only the active will explain action. Hence causality is the distinguishing mark of being, and by being we mean cause. Whatever is to be considered as existing must be capable of action in some form.

But here an objection comes up from the side of common-sense, and we must consider it before advancing. It will be urged that we have assumed that all being is active, or causal, while there is also purely passive being. Our definition applies only to one realm of being, and ignores the other. Common-sense, then, moves to amend the definition so as to read, Being is not only whatever can act, but also whatever can be acted upon. It is quite willing to allow that all reality falls into one or the other of these classes. But the amendment is not accepted. This notion of purely passive being is a misleading abstraction from our physical experience. Matter appears to us as inert and receptive, and we overlook entirely both its force of resistance

and reaction, by which we become aware of its existence, and also the physical teaching concerning its dynamic nature. Thus we come to the notion of passive being, which serves merely as the object of another's activity. But, in truth, this notion is a pure contradiction. Action upon something which does not react is the same as action upon nothing. In order that being shall be acted upon, it must be able to react and condition the actor; and thus it comes under the general class of agents, or things capable of determining other things. Where this is not the case, action is not action upon something, but a pure creation of both its object and its effect. In action between things, the reaction of the thing acted upon is necessarily a factor of the effect. It is common to hear matter spoken of as the passive object of force; but an object without any power of its own would be no object. It is also called a vehicle of force; but, overlooking the sense in which matter can be a vehicle, it is plain that nothing can be a vehicle of force which has no power in itself. Thus a lever could not transmit energy if its own forces of cohesion and resistance did not give it a definite rigidity and coherence. Hence, while the distinction between being which acts and being which is acted upon is valid in daily practice, it is of no use in metaphysics; but both classes must be viewed as active. If, however, any one is still favorably disposed towards passive being, let him consider in what the notion of such being differs from that of non-existence.

Allowing, however, that the notion itself is possible, we have still to ask what help we get in explaining the universe from this assumption of passive being. What does it do, found, or explain? The reply will be that, no matter whether it explains anything or not, it is given in experience as a fact, and that we are in constant contact with it through our senses. We ask, again, How do we know that? The bare existence of a thing is never a sufficient ground for its perception; if it were, we ought to be percipient of

all existence. Hence, in order to the perception of a thing, there must be some corresponding action upon us; if not by the thing itself, then by something else. But, by hypothesis, this passive being does not affect us, and therefore we can perceive it only as some other being acts upon us. The passive being, then, not only explains nothing, but its existence can never be known except through a revelation. Now, whoever will reflect that this being does and explains nothing, and that all the effects upon him, by which he becomes aware of its existence, are the activities of something else, will see that there is, and can be, no warrant for introducing such a factor into a philosophical system.

No argument is needed to make this point clearer. Whether we consider the differentia or the function of the notion, it is equally plain that only the causal can have real existence. Yet so inveterate are the prejudices of the senses, that nothing short of criticising them in detail will free us from them. Thus, in spite of all that has been said, we are met by the objection that matter is certainly inert and inactive. Here, then, is a most palpable proof that all being is not causal—a proof which no amount of logical juggling and sophistical mystification will ever sweep away. We almost fear to ask, in reply, how we know that matter, as thus conceived, exists; for common-sense will not endure chaffing, and, when hard pressed by difficulties, is apt to stamp on the ground as an end of all discussion. To the children of the dragon's teeth, as Plato calls the disciples of the senses, there is nothing so real as the ground, and a lump is the typical conception of reality. Nevertheless —though with fear and trembling, lest some child of the dragon's teeth should overhear us—we will venture to ask, How do we know that matter, as thus conceived, exists? By definition it does nothing, and hence it is from no action of matter itself that we become aware of its existence. And this existence—which merely is, without doing anything—in what is it different from the bare idea of existence? But

we fear lest we exasperate the dragon's progeny by pressing these questions, and we take another standpoint from which to reply to the objection. If we allow matter to be a true existence, and not merely a manifestation of some basal power, we have to admit that its nature is altogether different from what appears. To begin with, the reality of matter as it appears is a multitude of non-appearing elements, and its inaction is only in seeming. Apparent matter has no true being; the elements only truly exist. And these elements are without the properties of materiality which belong to the mass, but, by their interactions, they found materiality. Just as the elements of a chemical compound have not the properties of the compound, but produce them, so the elements in general have not the properties of the mass, but produce them. Nor does the mass result from the simple juxtaposition of the elements, as a heap of bricks results from piling single bricks together, but, on the contrary, the relation of the elements is purely dynamic. The solidity of the mass is not the integral of the solidities of the elements, but depends entirely upon a certain balance of attraction and repulsion among the elements. Its resistance to fracture and extension, also, depends not on a rigid continuity of being, but on the attractions which hold the parts together. Hence we may say that materiality is but the phenomenal product of a dynamism beneath it. And in this under-realm, as physics teaches, all is incessant activity. Everything stands in the most complex relations of interaction to everything else. When this fact is fairly grasped, we see that the alleged experience of inactive being turns out to be only an experience of phenomena. Of course, no one denies the phenomena of rest and inaction, but physics shows that they are only the phenomenal resultants of incessant basal activities. Equilibrium is balanced action. Rest is the resultant of the conspiring energies of the system. This is the view towards which physics tends, and any other would result in making matter a pure

phenomena. Only on the dynamic theory of matter can the proper existence of matter be affirmed.

But, it will be further urged, surely the law of inertia is one of the best-established laws of matter. All mechanical science is built upon it, and results constantly verify it. This objection, also, is an unfortunate one. It rests upon the etymology of the word, rather than a knowledge of its meaning. The doctrine has a double signification. It first denies, not activity on the part of a material element, but only spontaneity with regard to its own space-relations. An element cannot change its own space-relations without the aid of some other. If at rest, it must remain at rest; if in motion, it must remain in motion, unless acted upon from without. But the law does not deny that a series of elements may, by their mutual interactions, pass through a great variety of changes. Advantage is often taken of the fact that the name, matter, is one, to forget that the thing is many; and thus the conclusion is drawn that the law of inertia forbids any action on the part of the elements. The second factor of the doctrine is, that every material thing opposes a resistance to every change of its space-relations; hence the phrase, force of inertia, which has so scandalized the etymologists. In either sense, the doctrine is far enough from affirming a mere passivity on the part of matter. There is nothing, therefore, in our experience of matter which conflicts with the doctrine that all being is active or causal. We conclude, then, once more, that being is cause, and that the only mark of distinction between being and non-being is a power of action of some sort.

We have carefully put pure being out at the door, and now it threatens to come back through the window. It will be said that our definition of being is not a definition, but only gives a mark which being must have. But, back of the power by which being is distinguished from non-being, lies being itself, and we seek to know what this is.

The notion of cause admits of analysis into the ideas of being and power, and hence cause is the union of the two. The being has the power, and the power inheres in the being. In reply to this objection, we admit the separation of the ideas in thought, but deny that they can be separated in reality. The attempt to separate them in fact leads to insoluble contradictions, and this shows that the distinction is a logical one. We have, then, to discuss the metaphysical meaning of inherence.

To the question, In what sense does a thing have or possess power? the common answer is, that the power inheres in the thing. But this merely shifts the problem, for the meaning of this inherence is not clear. Uncritical thought contents itself with a few sense-images, and does not pursue the problem further. Spokes in a wheel, or pegs in a beam, or pins in a cushion, serve to illustrate to careless thinking the nature of inherence. Matter, which to the dragon's descendants is ever the type of being, is not in itself forceful, but forces inhere in it. Thereby matter becomes active, and force gains an object or fulcrum, etc. These forces do all that is done; they found all change, quality, and difference; but the matter is supposed to provide them a resting-place. This is the current conception, and, in some of its forms, it rules most of our scientific speculations. In this view there is a division of labor in reality. There is one part which simply exists and furnishes the being. It does nothing but be. The activities are next supplied by force or power, which finds in the being a seat, home, fulcrum, etc. We have, then, a certain core of rigid reality, which exists unchanged through the changes of the thing, and supplies the necessary stiffening; and around this we have a varying atmosphere of activities, which are said to be due to force. But it is plain that we have fallen back again into the abandoned notion of pure being. The being does not account for the power. It is a pure negation, and is utterly worthless. The power and the being are in no relation ex-

cept that of mutual contradiction. The only possible reason which even thoughtlessness can urge for positing such being would be, that power must have some support; but it is plain that this passive negation could not support anything. The force, or power, in such a case would be self-supporting, and thus we should come to the doctrine often held, that reality is nothing but force. The existence of force would never warrant the affirmation of the forceless, and the forceless could never be viewed as the origin of force. These difficulties serve to show that the distinction between being and force, or power, is only logical.

The truth is, that in this separation between a thing and its power we are the dupes of language. In order to speak of anything, we must adopt the form of the judgment, and put the thing as the subject and the attribute as the predicate. In this way language makes an unreal distinction between the thing and its attributes, and unreflecting commonsense mistakes the logical distinction for a real one. Indeed, language often makes a distinction between a thing and itself. Thus man is often said to have a mind or a soul. Here man appears as the possessor of himself; and it is not until we ask who this possessor is, and how he possesses the soul, that we become aware that language is playing a trick with us, and that man does not have, but is, a soul. Things as existing do not have the distinction of substance and attribute which they have in our thought. They do not consist of subjects to which predicates are externally attached, as if they might exist apart from the predicates, but they exist only in the predicates. Thus we say that a triangle has sides and angles; but though we thus posit the triangle as having the sides, etc., a moment's reflection convinces us that the triangle exists only in its specific attributes. If we should allow that the triangle could be separated, in reality, from its attributes, we should fall into absurdity. We could not tell how the triangle exists apart from attributes, nor how the attributes are joined to it. Now the distinction

between a thing and its power is of this sort. It is perfectly valid in thought, but we cannot allow it to represent a real distinction in the thing without falling back into the notion of pure being and its attendant difficulties. We come, then, to the conclusion that being and power are inseparable in fact, and that they are simply the two factors into which the indivisible reality falls for our thought. The causal reality cannot be viewed as containing in itself any distinction of substance and attribute, or of being and power. It must be affirmed as a causal unit, and, as such, uncompounded and indivisible.

In further justification of this view, we next point out that the notion of power is, in every case, a pure abstraction, and, as such, is incapable of inherence. What spontaneous thought means by this expression is no doubt true, but the meaning is incorrectly expressed. We speak of the soul, or of the physical elements, as having various powers, and thus the thought arises that these powers are true entities in the thing, which underlie all activity. Accordingly, it is not the elements which attract, but the force of attraction. It is not the atoms which act in chemical combination, but affinity does the work. If a heated or electric body produces sundry effects, the body itself is not the agent, but heat or electricity is called in. Thus the atom appears as a bundle of forces, each of which is independent of all the rest, but all of which, in some strange way, make the atom their home. Now this will never do. These separate forces are only abstractions from different classes of atomic action. If there be any atom, the actor in each case is the atom itself, but the atom is such that its activity is not limited to a single direction, but falls into several classes. This fact we seek to express by the notion of separate inherent forces, but these are never more than descriptions of the fact mentioned. When we say that an element has a power of gravity, affinity, etc., we say nothing more than that the element can act in these several ways. The powers are not

separate instruments which the thing employs, but only abstractions from the thing's action. Every act of the atom, in whatever form, is to be attributed to the atom itself, and not to forces in it; and every act of the atom is an act of the entire atom. Any other conception leads to contradiction. The same is true for the other illustration. Will, intellect, and sensibility are not independent powers in the soul, but only names for different forms of the one soul's action. The distinction of faculties in the soul is a convenient classification in psychological study; but when the faculties are viewed as separate factors in the soul, we involve ourselves in absurdities. In many treatises of the earlier psychology, this distinction was carried so far as to leave the soul nothing to do but to have faculties. In the doctrine of the will, especially, this view wrought great mischief. The will was hypostasized and separated from the intellect, and thus it was made to appear as a blind arbitrariness, lunging about in the dark, and without any direction from within or without. In this way freedom was reduced to chance, and determinism was invoked as a relief. But this conception of the faculties is at last banished from psychology. Every act is an act, not of the will, but of the entire soul. Every feeling is an affection, not of the sensibility, but of the entire soul. Every thought is an act, not of the intellect, but of the one and indivisible soul. And so we come to the conclusion that power in general is not a thing or an instrument, but only an abstraction from the activity of some agent. Hence the question, How can power inhere in being, disappears, because the phrase, inherent power, represents no reality, but only an abstraction. The reality is always an agent. How an agent can be made, we do not claim to know; but it is plain that it is not made by joining the two abstractions of power and pure being. How an agent can act is also unknown; but it is plain that we get no insight into the possibility by positing a rigid core of inert reality in the agent.

Inherence, then, has no metaphysical meaning. The fact is an agent, one and indivisible, and this agent is active through and through. But, to explain the agency, we are not content with the agent itself, but form the abstraction of power, and smuggle it into the thing. When the forms of agency are many, we form a corresponding number of these abstractions, and give each a separate existence in the thing. Then it becomes a tremendous puzzle to know how these powers inhere in the thing, or how the thing can use them without an additional power of using them. The puzzle is solved by the insight that these inherent powers or forces are only abstractions from the activity of the one indivisible agent. The only case in which power is not such an abstraction is, where it is used as identical with being, as when we speak of the malign, or heavenly, or invisible powers. Such a use of power, instead of being, has the advantage of escaping the lumpish implications of the latter word; and it might be of use in freeing ourselves from the bondage of sense-experience, to think always of a real thing as a power. In this sense of the word, we should say that all the realities of the universe are powers, and that the phenomenal universe is but the manifestation of hidden powers. We conclude, then, that a thing does not exist by virtue of a kernel of reality which is in it, but it acquires a claim to reality through the activity whereby it affirms itself as a determining factor of the system. It exists only in and through its activity. Being and action are inseparable. To be is to act; the inactive is the non-existent.

This view cannot be pictured; it must be thought. Hence it will not commend itself to minds which think only in sense-images. Although reason shows the inert core of rigid reality to be a useless and baseless fiction, they will still prefer something which can be pictured to something which can be thought. Such minds are joined to their idols, and must be left alone. But less ossified minds, also, will find some difficulties in the last determinations of being. It

might be allowed that that which never acts is unreal; but when we make being inseparable from action, we seem to have gone too far. It cannot be allowed that the existent is always active. But this scruple, again, is the product of misread sense-experience. In the preceding paragraphs, we have seen that experience gives no hint of inactive existence, and it is plain that the inactive never can be discovered in external experience. The notion is a contradiction; for we know a thing to exist only as it acts upon us. Physics, too, has conducted us behind the dead rest of appearances, and introduced us into a world of powers in incessant and unwearied action. It is only in the mental life that we may hope to find being inactive and yet real. It may be said that consciousness itself may cease, and all the mental activities with it, while we know that we have existed across the interval of unconsciousness and inaction. Possibly a correct philosophy of time would leave this objection without any foundation; but, without entering into this obscure realm, we may point out that the conscious activities of the soul are by no means the whole of its activities. It is in constant relations of interaction with the body, which are not reported in consciousness, and very much takes place in the mind itself which does not rise into consciousness. Indeed, the conscious life of the soul is but the outcome, under the proper circumstances, of its basal spontaneous and ceaseless activity. The soul is a power among many other powers, and is in interaction with them, and, when certain conditions are fulfilled, it rises not into activity, but into conscious activity. Experience lends no aid and comfort to the notion that being can exist in complete inaction. Its validity can be determined only by reason.

Forthwith the objector urges that, if a thing should become perfectly inactive, it would yet continue to exist. We ask, in reply, How do we know that? How could we distinguish this inaction of the thing from its non-existence? The seeming support which this view finds in experience is

the fact that a thing already in interaction with the whole universe may, upon a change in its relations, pass into new forms of activity. But this relative inaction is never to be mistaken for absolute inaction. It may be said that, since this or that particular form of action is not necessary to being, therefore no form is necessary. But this confounds the concept with reality. The concept of motion implies no specific velocity, but every real motion must have some specific velocity. The reality of a thing, also, does not imply that it acts in this or that way, but only that it acts in some way. The thing which does nothing, either within itself or to others, exactly meets our conception of non-existence. But we may say that there is still this very great difference, that the inactive being can, upon occasion, pass into action, while the inactive non-being cannot. Hence there must be a back-lying core of being which exists, whether it act or not. We ask, again, How do we know that? How do we know that a thing can pass out of all relations of interaction and community with the universe, so that it no longer exists for the universe, nor the universe for it? And if it should occur, how would we distinguish such a fact from the destruction of one thing and the creation of another? It is plain that we are here dealing with a figment of the imagination. This something, which has passed into complete inaction, is merely the shadow of a thought, like the notion of pure being, and the only thing which gives it any body whatever is the misread intimations of the senses. That such a relapse into nothingness is possible is totally without proof; and the only reason why we affirm continuity of being in things is, that they never pass into inaction. Thus we affirm the indestructibility of matter, because we never find it relapsing into inactivity. Moreover, such a relapse, if it were possible, must have some ground. Action can no more cease than begin without a cause. The same feelings of weariness which formerly made the first law of motion incredible to sense-bound minds lead

the same class of minds to think that action can cease without a cause. No one ever imagined that motion could begin without a cause, but every one thought it credible that it should cease without a cause. But, when thought is steady, it becomes clear the cessation as well as the beginning of either motion or action is a change, and, as such, demands a cause as much as its beginning. But the ground for the cessation of action can lie only either in the self-determination of the agent, or in some failure of energy in the agent, or in some repressive action of other agents. The first notion is a contradiction. The second would be, strictly, a relapse into non-existence; and the third would be a destruction of the thing. If any action of external agents deprived a thing of all energy, and extinguished all resistance, the thing would be destroyed. Hence, that a thing should pass into complete inaction would be equivalent to its passage out of existence. We return, then, to our view that being is essentially active, and that a thing is only as it acts.

Several difficulties remain for mention. Must not being exist before action? Or, could there be any action, unless being can exist apart from action? Certainly, a thing must exist in order to act, but, on this theory, it must act in order to exist, which is absurd. This difficulty is, partly, a repetition of a previous objection, which confounded some particular case of action with action in general. A thing does, indeed, exist before the specific acts which we observe, but not before all action. For the rest, the difficulty rests upon a confusion of logical with temporal antecedence. The postulate of action is an agent, but this agent is not temporally antecedent to the action. Action is a dynamic consequence of being, and is coexistent with it. Neither can be thought without the other, and neither was before the other. Being did not first exist, and then act; neither did it act before it existed; but both being and action are given in indissoluble unity. Being has its existence only in its action, and the action is possible only through the being. The

common doctrine of inherence makes a kind of spatial distinction between a thing and its activities; the objection we are considering seeks to make a corresponding temporal distinction. Both views are alike untenable. Metaphysically considered, being is self-centred activity, without distinction of parts or dates. In our thinking, we separate the agent from the agency, but, in reality, both are posited together; indeed, each is but the implication of the other. We would not accept the scholastic doctrine, that being is pure activity; for the act cannot be conceived without the agent. But we deny that the agent can, in reality, be separated from agency; each exists, and is possible, only in the other.

Another scruple is as follows. The idea of being admits of no comparison. The mightiest exists no more than the feeblest. Nothing can be more real than any other thing; and, in so far as things are real, they are all on the same plane. But if to be is to act, it follows that the most active has the most being. This objection rests on confounding the logical notion with real existence. Whatever falls into a class does so by virtue of possessing a certain mark, but this mark may itself vary in intensity so that, while all the members are alike in the class, they may yet fulfil the conditions of membership more or less perfectly. Whatever meets certain conditions falls under the notion of being; and, in this sense, one thing exists as much as another. But this does not hinder that these conditions should be fulfilled more or less extensively and intensively; and, in this sense, one thing may have more being than another. Whatever moves at all, moves; and yet it is allowable to say that one thing has more motion than another. Whatever acts, acts; and yet some things act more intensively and extensively than others, and, in this sense, they have more being than others. Indeed, the only measure of being is the extent and intensity of its action. Being is not measured by yards or bushels, but solely by its activity.

All that we mean by saying that the being of God is infinite is, that his activity is unlimited, both in intensity and range. With this understanding, the notion of the *ens realissimum*, which many philosophers, notably Herbart, have found so obnoxious, is both admissible and demanded.

In dealing with detailed objections, there is always danger of losing sight of the main argument. In the present case, it has been absolutely necessary to consider at length many difficulties and scruples arising from our bondage to the senses, in order to win even a hearing for the views presented. They are ostensibly false, and only a lengthy criticism avails to remove the misleading clearness of current prejudices. But, for the sake of clearness, it may now be allowed to repeat the argument as follows: The notion of being is, in itself, purely formal, and its content needs to be determined. The notion of pure being is rejected, (1) as being only a logical concept, and, as such, incapable of real existence; and, (2) as inadequate to the functions it has to perform. There is no progress from it to definite being, and there is no regress from definite being to it. The notion of passive or inactive being is also rejected as a whim of the imagination, which founds nothing, and falls back into the notion of pure being. Hence, all reality must be causal. But, in the popular thought, reality itself is divided into two factors, being and power. This distinction is only a logical one, and cannot be admitted in reality, without falling back into the doctrine of pure being. Again, in the popular thought, a thing exists by virtue of a certain core of reality which is in it, and which supports the activities and attributes of the thing. We reject this core as a product of sense-bondage, and as accounting for nothing, if allowed. We reverse this popular view, by rejecting the notion of a stuff which simply exists, and furnishes things with the necessary reality. For us, things do not exist because of a certain quantity of this reality which is in them,

but by virtue of their activity, whereby they appear as agents in the system. How this can be is a question which involves the mystery of creation, or the mystery of absolute being; but creation is not the work of the philosopher. The question we have to answer is, What things shall we regard as existing? And the answer is, Those things exist which act, and not those which have a lump of being in them; for there is no fact corresponding to the latter phrase. Things do not have being, but are; and from them the notion of being is formed. These agents, again, have in them no antithesis of passive being and active energy, but are active through and through. Sense-associations and our own feelings of weariness render it difficult to conceive of active being without a central core of inert solidity on which the productive activity may rest. But we may free ourselves from this result of habit by persistently asking, (1) what reason there is for positing such a core, and, (2) what it could do, if posited.

Before closing, something more must be said about the unity of being to which reference has been made. This unity does not mean that there is but one being in the universe, but only that every true thing is a unit to which the idea of division has no application. We use it only as denying composition or plurality. If a thing were compounded or plural, it would not be a true thing, but an aggregate, and the reality would be the component factors. A crowd or a sum has no reality, as such; only the composing units are real. The thought of a compound is impossible without the assumption of uncompounded units; and these are always the true realities. Hence, the divisible is never a proper thing, but an aggregate or sum. But this unity of being is not to be confounded with simplicity, and hence is not incompatible with complexity and variety. Herbart identifies the two, and argues that the unity of the subject is incompatible with a plurality of attributes. This objection rests partly upon the false view of inherence which has

been considered, and partly upon a peculiar theory of predication. If attributes were things, and inhered in the subject in an external manner, or if each attribute expressed the essence, the objection would be valid. Incommensurable attributes, on this view, must belong to different things. Or, if the activities of a thing were activities of only a part of the thing, again the objection would be valid; for proper things have no parts. Plurality of activities is compatible with the unity of the thing only as each activity is the activity of the whole thing. But the one can be manifold without being many. How there can be variety in unity we cannot tell, any more than we can tell how reality is made, but it is given as a fact in our experience. In truth, we have direct experience of only one unity, the conscious self; and this unity is given as complex or manifold in its manifestations.

Philosophers have made great efforts to explain how the one can be manifold, but without success. Their efforts have generally resulted in denying either the manifoldness or the unity. The first result is well illustrated in the Eleatic philosophy. This reduced all manifoldness to illusion, and then failed to explain the illusion. The other extreme is illustrated by Schelling's doctrine of the identity of opposites in the absolute, to which reference has been made. But as the absolute is expressly put beyond the possibility of consciousness, it soon turns out that the alleged identity is only the identity which all objects have for vision in indistinguishable darkness. This becomes clear when, from Schelling's absolute, we attempt to reach the world again. Then he is forced to posit implicit antitheses and "dark nature-grounds" to such an extent that the absolute disappears in a plurality of oppositions. And the attempt to construe how the one can be manifold will always lead to one of these two results; and either is fatal to thought. The one conceived as pure simplicity leads to nothing, and explains nothing. A world of manifoldness and variety can never

be deduced from its contradiction. But the other view fails to reach any unity; it hypostasizes its antitheses, and smuggles them whole into the one, which thus becomes not one, but an aggregate. Hence, any conception of being which does not include both unity in variety and variety in unity, brings thought to a stand-still. Both of the errors mentioned result from the attempt to deduce variety from the abstract notion of unity, and unity from the abstract notion of variety. In truth, though thought demands the union of both in an indivisible synthesis, still, if we had been left merely to think about the problem, we should never have known whether it was soluble or not. But experience comes to our aid in this indecision of the understanding, and, in our consciousness of self as manifold, shows that the problem has been solved in reality, though thought be unable to construe it. This is only one of many cases where we are forced to allow that being has mysteries which human thought cannot grasp, but which it is forced to recognize as facts. But this does not mean that thought is forced to accept contradictions. Unity, as the opposite of divisibility, does not exclude manifoldness, but only plurality. How unity can be manifold is, indeed, an insoluble question; but it is, properly, no more insoluble than how unity can be simple. Both questions involve the problem we declined at the beginning, How is being made? or, How can being be? We cannot be expected to tell, therefore, how reality has met this or that demand of thought, but only to show, (1) that it is a demand of thought, and (2) that reality has met the demand, though we know not how. As the result of the whole discussion, we conclude that every true thing, in distinction from both compounds and phenomena, must be regarded as a definite causal unit.

CHAPTER II.

THE NATURE OF THINGS.

In the previous chapter, we have sought to show that being does not exist, but that certain specific things, or agents, are the only realities. Being is only a class-notion, under which things fall, not because of a piece of existence in themselves, but by virtue of their activity. The conclusion reached was, that the universal nature of being is to act. But this conclusion determines the nature of things as distinguished from non-existence only, and not as distinguished from one another, or as capable of their peculiar manifestations. The present chapter is devoted to a discussion of nature in the latter sense.

This which we call the nature of things has been variously denominated as the essence, the what, or the whatness, of things; and all of these terms refer, not to the external properties of things, but to some inner principle, whereby things are what they are. But, whatever the term, the idea is entirely familiar to our spontaneous thinking. We believe that everything is what it is because of its nature, and that things differ because they have different natures. There is one nature of matter, and another of spirit. There is one nature of hydrogen, and another of chlorine. But we are not content with simply affirming the existence of such a nature; we also seek to know what it is. The nature of a thing expresses the thing's real essence; and we hold that we have no true knowledge of the thing until we grasp its nature. What is the thing? and what is its nature? are

identical questions. The doubt of scepticism most often expresses itself by questioning whether the true nature of things does not lie beyond the possibility of knowledge. Such is the theory which we all spontaneously form. It may be that a consideration of the problem of change and becoming will compel us greatly to modify our doctrine of things; but, for the present, we allow that things exist in the common meaning of the word, and ask how we are to think of their nature or true essence. What is the general form which our thought of a thing's nature must take on?

An answer results directly from the conclusions of the previous chapter. We there found that activity is the fundamental mark of all being. Whatever truly exists, whether matter or spirit, must be viewed as essentially active, and as differing, therefore, only in the form or kind of activity. The so-called passive properties of things all turn out, upon analysis, to depend on a dynamism beneath them, and leave us only an agent in action. But, in order that being should be definite, this activity must have a definite form or law. Activity in general, like being in general, is impossible; it is merely the logical notion, from which the specific determinations which belong to every real activity have been dropped. Now this rule or law, which determines the form and sequence of a thing's activities, represents to our thought the nature of the thing, or expresses its true essence. It is in this law that the definiteness of a thing is to be found; and it is under this general form of a law determining the form and sequence of activity that we must think of the nature of the thing. But when we say that things differ only in the form or kind of activity, we are not to conclude that they all have a common being, for this would be a return to the notion of pure being. We are incessantly tempted to think of a kind of raw material, which, by receiving different determinations, becomes different things, and we must guard ourselves against the seduction. Things exist only in their activities, and have no being apart from them.

They are, in brief, concreted formulas of action. But this conclusion is so remote from our ordinary modes of thinking that we must, by a criticism of other conceptions, show that we are shut up to it.

The first thought of common-sense in this matter is, to find the nature of things in their sense-qualities. Accordingly, when we ask what a thing is in itself, common-sense enumerates its sense-qualities. Vinegar is sour, aloes are bitter, sugar is sweet. But a moment's reflection shows the invalidity of this crude conception. To begin with, it applies only to sense-objects, while the notion of a nature applies to all being. In the next place, sense-qualities never reveal what a thing is, but only how it affects us; and now we know that sense-qualities are purely phenomenal, and have no likeness to anything in the thing. There is neither hardness in the hard, nor sweetness in the sweet; but certain things, by their action on us, produce in us the sensations of hardness or sweetness. Again, things are in manifold interaction with one another; and this interaction, also, is an expression of their nature. This fact renders it strictly impossible to find the nature of things in their sense-qualities, or to tell what things are by enumerating their sense-qualities. Things have much more to do than to appear to us. Moreover, even crude common-sense finds reason in experience for changing its views. The same thing is found to have different sense-qualities. The vinegar, which is sour, is also colored, fluid, heavy, etc. But these qualities are incommensurable among themselves; so that, if one is supposed to reveal the nature, the others do not, unless we suppose that a thing has as many different natures as it has sense-qualities. In that case, a thing with various qualities would not be a unit, but a complex of things. But this supposition so clearly destroys the unity of the thing that it has never been held by common-sense. Thus the attempt to find the nature of a thing in its sense-qualities shatters on its inner contradiction. If the assump-

tion of a thing distinct from a complex of phenomena is to be maintained, the nature of that thing cannot be found in any or all of its sense-qualities.

This fact led speculators, at a very early date, to adopt another view, according to which the thing retreats behind the qualities, as their support, and the qualities appear as states of the thing. The essence is no longer revealed in the qualities, but is their hidden and mysterious ground. The thing is no longer colored, extended, etc., but is the unreachable and unsearchable essence which appears as such. Thus we are on the highway to agnosticism and scepticism. The thing in itself has retreated from sight, and reports its existence in manifestations which, after all, do not manifest. And, since the manifestations are all that is immediately given, there seems to be no longer any ground for affirming that dark essence which can never be reached. This notion of a thing with various and changing states is the foundation of most of our spontaneous metaphysics, and of very many of our philosophical puzzles. Like the notion of inactive being with inherent forces, it is an attempt to solve some of the most important problems of metaphysics. The value of the solution will come up for future discussion. The notion is of interest, as showing that the human mind has recognized the problem, and has attempted a solution.

Two views have resulted from the need of putting being back of its apparent qualities, instead of finding it in them. The first is, that being, in itself, is without quality of any sort; the second is, that being has qualities, but what they are is entirely unknown. The first view is our old friend, pure being, back again. Being is the ground and support of the definite qualities; but in itself, as the unmanifested reality, it is without quality altogether. This view we have sufficiently discussed in the previous chapter, when speaking of pure being and of inherence. That which is without quality of any sort can found and support nothing. The formless clay, which we mould into form, is itself a perfectly

definite compound of definite elements, and it is susceptible of being moulded only because of its definite and peculiar properties. The formless nebula, which condenses into a solar system, is indefinite only in seeming. The reality is a host of definite elements, with definite laws, and in definite relations of interaction with one another. The chemical elements have not, indeed, the qualities of their compounds; but some qualities they must have to make the compounds possible. Neither oxygen nor hydrogen have any of the properties of water, but they must have fixed properties of their own in order to produce water.

The second view has been more definitely formulated by Herbart than by any other philosopher; but the majority of agnostics would accept it in one form or another. Herbart held that the nature of being is unknown, but that, whatever it may be, it falls under the notion of quality. There is some simple quality, x, which, if we could only reach it, would fully and truly express the nature of the thing. In our sense-experience we never press through to the realities of things. Our experience is of compounds and their qualities; but we cannot doubt that the realities themselves have qualities which found those of the compounds. Herbart escaped the difficulties involved in the plurality and incommensurability of sense-qualities by viewing things as they appear; as only complexes of phenomena, and by denying plurality of qualities to the real. These conclusions he reached by a very ingenious, but highly artificial and unsatisfactory, theory of knowing, in which he constantly confounds the independent something in sensation with absolute being. In his theory, every real thing is simple, and its true nature is expressed in some simple quality. This quality is not an effect, like sense-qualities, but reveals the essence of the thing. How this can be, we may understand from the Cartesian doctrine of attributes. According to Descartes, the attribute expresses the essence, and tells what the thing is in itself, and apart from all else.

So the universal attribute of matter, and hence its universal essence, is extension. The essence of mind is thought. Each of these attributes tells, not what its subject does, but what it absolutely is. Of course, Herbart did not accept these results, but he held to the notion that some unknown quality exists, which expresses the nature of its subject as completely as Descartes thought that extension expresses the essence of matter.

But, to make this doctrine clear, the meaning of quality must be explained. If, by quality, only kind be meant, the statement that the nature of everything falls under the notion of quality is a pure tautology, for quality is taken to mean nature. The word is often used in this sense. When we say that all being must have some quality, we mean only that all being must have some definite nature, or be of some definite kind. If this were all Herbart meant by quality, it was not necessary to insist upon it, and he might have confined himself to affirming the simplicity of being. But qualities fall into two classes, those which are discerned in intuition, and those which are reached by reasoning and comparison. The former class comprise adjectives and the abstract nouns founded upon them; and it is this class from which the notion of quality is originally obtained. There is, too, a sense of reality in an intuition which no amount of reasoning can ever produce; and there is, also, an apparent entrance into reality when it is revealed in our senses which we never enjoy in thinking. Hence, when we allow that our senses cannot attain to the true nature of reality, we still cherish the hope that there may be a supersensible intuition possible to other beings, and perhaps to ourselves in some other life, which shall reveal things as they are. In our experience of color, fragrance, and harmony, we enter into their inmost nature, and are conscious that there is no back-lying color or tone "in itself" which refuses to come into knowledge. It never occurs to us to think of the color we perceive as the hiding of another color which remains

forever invisible. Such spectres haunt thought, but not intuition. And so, whenever we conceive of a state in which we shall know things as they are, we always retain this feature of intuition in opposition to reflection. Qualities, then, may express some possible intuition, or they may express a complex of relations. Herbart seems to have understood them in the former sense, for in the latter they are incompatible with the basal conceptions of his system. He views his elemental beings as simple and unrelated. Each one has a simple and self-centred existence, and hence cannot have qualities implying relation and complexity. Our senses do not reveal the true nature of things, but only the effect upon us. We say the thing is hot or cold, sweet or bitter, black or white, etc., but none of these things express more than subjective effects, which are referred to some objective cause. But there is some unknown sense which, if we had it, would reveal the thing as it is in itself. In that case, the nature would be revealed in intuition, and not in reflection.

But, however this may be, neither adjectives nor abstract nouns are capable of expressing the true nature of things. We have already pointed out that changeless things will not account for phenomena; and qualities, in this sense, are essentially changeless. They may come and go, but their content is invariable. Red may give place to black, but red cannot change to black. We say that things change their color, but never that one color becomes another. Common-sense, therefore, has always put change in things, and never in qualities. The latter never change, but are exchanged. As Plato taught, things may glide from the realm of one idea to that of another, but the ideas themselves are fixed in their contents and mutual relations. Thus they constitute a realm apart from all change, and in this realm alone could Plato find the fixedness which is demanded by knowledge. It was this constancy of the ideas with which he refuted the Sophists, who sought to draw all things and truths into perpetual flow. If, now, we are to

view the nature of things as expressed by a quality of the kind in question, we must bring the thing under this notion of simplicity and unchangeability, and thereby we should make it incapable of explaining change, and hence inadequate to the demands upon it. We should fall back into the Eleatic doctrine, which excludes all change from being, or we should have to affirm a doctrine of absolute and groundless becoming, and deny the existence of things altogether. Both of these views will be dwelt upon in the next chapter. Here we point out that no theory which admits the reality both of things and of change can view any simple quality as expressing the nature of a thing.

This fact deserves further consideration. In a perfectly changeless universe, we might think that in some changeless quality we discern the true nature of things. Even now, when some quality is always present, as the so-called primary qualities of matter, we are apt to view that quality as expressing the essence. But in a changing world things have a past and a future, as well as a present; and these, also, must be expressions of the nature. Yet a present quality, at best, only expresses what a thing now is, and not what it has been or will be. Again, in a dynamic system, the essential thing is activity, and the law of this activity, also, must be taken into account. Even the uncritical thinking of daily life recognizes that the same thing may manifest the most different properties at different times, yet without losing its identity; and that very different things may, at times, be indistinguishable by the senses, yet without any approach to identity of nature. It may be that no two things in the universe are alike in all respects, and that the apparent likeness, even of the chemical elements of the same class, is but a parallelism within the limits of observation of essentially different things. The attempt to tell what a thing is by its present qualities would confound such cases. It may be that common-sense is mistaken in assuming identity under different forms, but the same common-

sense which affirms the notion of quality also affirms the identity. We must, therefore, try to reconcile common-sense with itself, before declaring it mistaken. But if this identity through change is to be maintained, we must, in determining the nature of a thing, take into account what it has been and what it will be; just as, in an equation of a curve, we must know the relations of the co-ordinates not merely for one point, but for all points. Any formula which fails to give this universal relation is not the true equation.

If, then, some quality were present throughout the thing's history, it could not be identified with the nature of the thing, for the nature must account for the changing, as well as the changeless, qualities. Hence, if we should view extension as an essential quality of matter, we could not regard it as expressing the nature of the material elements; for they, if real, have many other qualities, which must also be founded in the nature; and, besides, extension is an effect, and not a passive quality. In fact, the view we are combating belongs to the pre-speculative period of thinking, when being was viewed as inactive and changeless. Although it was recognized that sense-qualities cannot reveal the essential nature of the thing, still it was conceivable that some occult quality might do so. But, as soon as being was seen to be essentially active and changing, this view became untenable. On these two accounts, therefore —(1) the unchangeability of qualities, and (2) the necessary changeability of things—we deny that any simple quality or combination of qualities can ever represent the nature of a thing. As long as we remain in the realm of qualities, we can only define the thing as that which has certain qualities under certain circumstances, and certain other qualities under certain other circumstances.

The outcome of the previous argument is, that no intuition or action of the receptivity can reveal the nature of a

thing. This nature must forever remain supersensible, and its determination must always be a problem of reason, not of sense. Hence we must give up all attempts to grasp the nature of reality by asking how it looks. The nature can never be expressed by a quality, but only by a rule or law according to which the thing acts and changes. And this conception, in some of its aspects, is entirely familiar to our daily thinking. When water appears now as ice and now as vapor, common-sense never doubts that there is some principle which determines the kind and sequence of these states. Or, when an egg, under the appropriate circumstances, develops through various stages into the typical form, we say that there is a law which determines the form and sequence of this development; and we should unhesitatingly view the nature of the bird, not as the external product, but as the law by which the development was ordered so as to reach the product. Or, when two or more chemical elements enter into various chemical combinations, and manifest particular properties in each, we say that the nature of the elements determines the result. Again, when the soul runs through various stages, and manifests various forms of action, we say that the nature of the soul determines the form and sequence of these stages. Thoughts, feelings, and volitions are not lawless and unrelated, but their existence and their inter-relations are determined by some one principle, which we call the nature of the soul. We utter, then, no strange thought, but one in perfect accord with daily thinking, when we define the nature of a thing as that law or principle which determines the form and character of its activity. The objection which common-sense has to making this definition universal is based upon the false notion that being may be inactive and changeless as well as active and changing. But when it is seen that all being is essentially active, the objection disappears.

But it will be asked, What better off are we than before? If, then, we had to define a thing as that which has certain

properties, now we have to define it as that which has a certain law, and thought is in no way advanced. So far as insight into creation is concerned, this is true; but it is not true for thought. The theory which finds the essence of a thing in some simple quality makes no provision for activity and change; or, if it provides for change, it makes no provision for identity. That thing whose nature is expressed now by one quality, and now by another and incommensurable one, has no identity with itself. The theory which finds the essence of a thing in a law which governs both its coexistent and its sequent manifestations does make provision for activity, and, in some sense, for identity.

But how, it will be further asked, can a law be the nature of a thing? A law is only a formula in thought, while a thing is a reality. A quality does, at least, represent the way in which a thing appears, or the way in which it affects us. It stands, therefore, closer to the true nature of the thing than a law, which is purely a mental product. If, then, we cannot regard a quality as expressing the nature of a thing, still less can we find in a law the essence which we seek. A law is not, and cannot be, a thing. This objection would have validity against the absolute idealists of the later German philosophy, who identified thought with thing. If it were possible for us to get a perfect formula for the nature of anything, that formula would not be the nature as real, but the nature as conceived. The ineffable difference between a thought and a thing would remain an impassable gulf for human thought. But this is only our ancient admission that we cannot make reality, nor tell how it is made. Hence, whatever the nature of reality may be, whether quality or law, it can appear in our minds only as conceived, and never as the reality itself. And since we can only think about things, not make them, the only possible question is, Must we think of this nature under the form of a quality, or as a law or rule of action? The attempt to think of it as a quality fails, and we decide that the form of

our thought must be that of a law of activity. This is the only conception which provides for change and action. The further question, how a law can be set in reality so that, from being a thought, it becomes a thing, involves the mystery of creation, or of absolute being. We do not pretend to know how being is made. We only know that it is not made by taking an idea and stuffing it with a formless reality. But when being is made, it is simply a concrete formula of action. Care, however, must be taken not to overlook the significance of the term concrete, for it contains that mystery of reality which no thought can ever define.

A single misunderstanding must be warded off. The word nature is often used as the universal in a class. Thus we speak of human nature, and mean those forms of activity which are common to all men. In this sense, we speak of all men as having a common nature, and we view the individual as an illustration, or specimen, of the universal. Again, we may take the equation of the ellipse, and by giving the arbitrary constants different values, we may reach a series of ellipses, all of which have the common nature of the ellipse. But, in this sense, no actual ellipse is explained by its nature, for in every case there is an arbitrary factor introduced. The nature merely serves to mark the ellipse as a member of a class, and not to explain its individual peculiarities, whereby it is marked off not only from other classes of figures, but also from all other figures of the same class. But, in the metaphysical sense, the nature of a thing is that law of activity whereby it is not merely a member of a class, but also, and primarily, itself in distinction from all other things. That, in addition to being what it is, it is also a member of a class, is a secondary fact. Everything has, primarily, the duty of being itself. When, then, we speak of the nature of a thing under the form of a law, we regard this law as entirely specific and individual, and not as universal. The nature has the form of a law, but applies only to the single case. In this respect it is like a mathe-

matical formula, in which the general values have been replaced by specific ones. Thereby the formula becomes real, and loses its universality. It applies only to a single and specific case.

Since the earliest times, approximations to this view have appeared in speculation. According to Plato, the essence, or true nature, of a thing, is the idea realized in it. The formless matter has no essence, but acquires it by union with the idea. This view is inadequate as implying the notion of pure being. It does not make the thing all idea, but allows it to consist of matter and idea. These mutually exclusive elements are brought together only by an act of philosophical violence. Again, with Plato, the idea was changeless, and, as such, could not form the nature of a changing thing. If, then, we should adopt Plato's view of the kingdom of changeless ideas, the nature of the thing would not be the idea, but that law of change which brings it into the realm now of one idea, and now of another. In the case of motion variable in velocity and direction, the nature of the motion does not consist in any of the definite velocities and directions which it has at given moments, but in the law which determines the velocity and direction which it shall have at any moment whatever. In the Platonic sense, therefore, the idea cannot be viewed as expressing the nature of a thing. A similar criticism applies to the theory that thought is the essence of being when thought is identified with the notion. First, thought is not the essence of being, but, at best, only expresses it. Thus, if we should hold, with Descartes, that extension is the essence of matter, it would not be extension as thought, but as real. Our thought might grasp the nature perfectly, but it could never transcend the indefinable difference between thought and thing. Again, the notion cannot express the nature of a thing. Like the idea, it is too rigid to admit of movement. It would set things apart in a fixed self-identity, and bring the universe to a stand-still.

Aristotle advanced upon Plato. He admits development in things, and defines their nature or essence to be their purpose or end. The nature of a thing is the "what-was-to-be." This conception, also, is quite familiar to daily life. The common mode of expressing what any invention is, is to tell what it is for. Inventions take their names from the end they serve. So, also, works of art and literature are classified according to their purpose. We estimate the execution, in each case, by the skill with which the purpose has been reached, but we find the essential nature of the work in the purpose itself. From adopting this conception of nature in general, many philosophers have been led to say that the real thing is always false, because it never adequately represents the idea. The idea only is the truth of the thing, and the reality is a more or less indifferent attempt to reach it. This thought finds frequent expression in speaking of human nature. We often hear it said that man's true nature is not what he is, but the moral ideal which he is to realize. Sometimes a verbal squabble results from this use of the word, and it is debated with great warmth and vehemence whether sin or righteousness be natural to man. The many meanings of the word allow each side to win. The scholastics, also, sought to define the nature of a thing by enumerating its possibilities or potentialities. The nature of a thing is the sum of its potentialities. There is something attractive in these views, especially in that of Aristotle. The theist cannot but be attracted by the doctrine that the purpose, or ideal conception, of a thing, is its true nature. But, while such views have a rhetorical and practical value, they are metaphysically insufficient. The difficulty with them all is that, in order to realize any of these future ends or possibilities, the thing must be definite, and have a definite law in advance. The indefinite is potential of nothing, and has no possibilities. Hence, the results express only outcomes of the nature, and not the nature itself. If, then, we regard the com-

plete outcome as expressing the nature of a thing, it is not because it is the outcome, but because it is now in the thing as its essential law. The only sense in which a purpose can express the nature of a thing is, that a purpose may, as in inventions, be the norm according to which the thing is formed, and thus it becomes the determining law of the thing and of its activity. But this would, in any case, apply only to the finite, and, even there, it would apply only on the assumption that the finite was created for a purpose. The doctrine which finds the nature in the potentialities is especially questionable, because potentiality is only a notion, and has nothing corresponding to it in fact. Apart from thought, the real is all, and neither the possible nor the necessary has any existence. In the world of reality, the possible and the actual are identical; and when the possible is not actual, it is not possible. We are able to conceive of various events and combinations of things which, because they contain no contradiction, we call possible; but this conception is entirely in our own minds. Again, of some process, whose conditions are not fully known, we say that it may turn out this way or that. But the fact itself is not in the potential mood. It can turn out in only one way. The potentiality is only an expression of our ignorance. Facts themselves are only in the indicative mood. If we should conceive of the primal atoms as whirled into space by some primal impulse, we should likely say that the possible combinations were infinite; but a moment's reflection shows that there was only one possibility, and that was the actuality. We can think of many combinations; but all these, though possible in thought, were impossible in fact. Again, when the conditions of an event are all fulfilled except some trifling one, which lies in our power, we are apt to call that event very possible. But, in truth, as long as the conditions are unfulfilled, the event is impossible; and, when they are fulfilled, the event is not possible, but actual. The fact in all such cases is that, if some condition were

fulfilled, the event called possible would become real; but, until then, the event is strictly impossible. Metaphysically, therefore, possibility and potentiality are empty words; and, at best, they are only figures of speech to express what would happen if certain conditions were fulfilled. They are never to be thought of as coiled up in the thing, waiting for an unfolding, because they are nothing until realized.

But if we are not to learn the nature of a thing from its outcome, how shall we know it? If the nature of a thing be the law of its activity, we must learn what it is by observing what it does. This is, no doubt, true, but there is a difference between learning what a thing is from its outcome and identifying it with the outcome. Although the law of the activity be learned from the activity, yet it is, in thought, separate from the activity. It is just that principle which demands that the activity shall have its actual form, and, thus, that the thing shall be what it is. Observation gives us form and sequence only; the nature is viewed as the principle which determines both. The form of our thought is that of a law; the content of this law must always be learned from the outcome. Hence, while we always think of a nature under the form of a law, we can describe the nature only by detailing its manifestations. In this sense, the scholastic doctrine is true. The content of any given nature is given in its outcome; and we can tell what a thing is only by observing what it does.

It follows, from the preceding paragraph, that our definition of nature is purely formal. It tells how we shall think, but never what we shall think. To determine what the nature of any given thing may be, we must fall back upon observation; and, as this can never be exhaustive, we can never be sure that we have an exhaustive knowledge of anything. The manifestations of finite things depend, also, upon their relations to other things, and it is not possible to tell what new properties they might manifest in new rela-

tions. It is a common suggestion, that the nature of the soul is only faintly revealed in consciousness as yet, and that, therefore, we are the profoundest mystery to ourselves. It is often suggested, likewise, that even the physical elements may have many possibilities which are unsuspected. To overcome this uncertainty, it would be necessary to know the purpose for which the thing exists. If this were possible, we should have an exhaustive knowledge of the thing, and we should know that it would never pass beyond the implications of the purpose. But we have no such knowledge. In our experience, everything seems confined to a limited round of manifestation. Things move in closed curves, and not in open ones. But this may be due to the relative constancy and equilibrium of the conditions in which they exist. All things may be framed for some fixed altitude, and they may be comprised in an upward movement. Leibnitz conceived of all finite reality as called to endless progressive development. Of course, this applies to the physical elements only on the supposition of their reality. But we have not yet sufficiently determined the notion of being to say whether the physical elements fill out the notion of being. If they do, we must allow the possibility mentioned.

Without doubt the reader remains unsatisfied, and urges that the being itself is deeper than the law; that it has the law, follows the law, realizes the law, etc. The inventions to which we have referred are more than their law, and houses are more than their plan. In each case there is needed a stuff, a raw material, which is to receive the law, and realize it. But this is only the old error, and it can be answered only by repeating what we have said again and again. This notion has a certain warrant in our own experience with the outer world. We are not creators, but only users of given material. The notion has a further application to all compounds. These, also, presuppose an antecedent existence, from which they are compounded. But

when we apply the theory to a proper reality or agent, we only fall back into the nothingness of pure being. Being could neither have, nor follow, nor realize a law, if the law were not essential to the being, or if the being were other than the realized law. A double temptation besets us here. On the one hand, we are tempted to make the being deeper than the law, and, on the other hand, we are tempted to make the law deeper than the being. In both cases, we mistake the separations of thought and language for separations in the thing. The nature is not in the thing, and the thing does not have the nature. The thing itself is all; and, as it is not compounded of being and power, no more is it compounded of being and nature. The fact is the unitary thing, and this thing acts in certain definite ways. From the fact of activity we form the notion of power. From the form and sequence of the activity we form a rule, which we call the law of its action. But, in strictness, this law does not found the definiteness; it only expresses it for our thought. It does not even rule the thing; but the thing acts according to it. We have hitherto spoken of the nature as the principle which determines the form and sequence of a thing's activities; but even this expression is inexact. This form and sequence are first facts, and not second. They found law, and are not founded in it. The definite thing is the only reality; and the distinction of thing and law is only in our thought. Being without law is nothing; and law without being is, also, nothing. Thus we come around again to our early position, that being is a concrete order of action. To know this order is to know the thing in itself, or in its inmost essence. The only insoluble question in such a case is, how the formula can be set in reality; but the question how being is made does not belong to philosophy. This contents itself with the humbler question, how we shall think about being after it is made. Our conclusion thus far is, that a thing must be viewed as a concrete and definite principle of action.

CHAPTER III.

CHANGE AND BECOMING.

The notion of being has already undergone manifold transformations at our hand, and the end is not yet. The most prominent factor in the current notion of a thing has not yet been mentioned. This is the element of permanence. We think of a thing as active, but still more as abiding. It has different states, but is always equal to, and identical with, itself. We have next to inquire whether this element of permanence can be retained; and, if so, how. It may turn out that permanence must be denied, and being reduced to process; or, rather, that the process alone is permanent. This result, indeed, is foreshadowed in the conclusions of the previous chapters, and flows directly from them.

The source of difficulty on this point is, the fact of change. Change is the most prominent fact of experience; and, since we view being as the source of all outgo and manifestation, we must provide for change in being. Otherwise, we fall back into the Eleatic conception, and the notion appears as inadequate. Now the admission that we cannot positively describe how a thing is made does not allow us to form a notion of things which shall contain an inner contradiction. The assertion of a mystery in things can never warrant us in contradicting ourselves. Our guiding principle throughout the entire discussion is, that a contradiction in a notion proves its untenability. Yet a manifest contradiction seems to exist in the common notion of a changing thing. This

assumes not merely a change, as that A should vanish, and B take its place, but that A itself changes, and yet remains the same. The former conception may be illustrated by a change of color. In this case, one color does not become another, but is replaced by another. The blue does not change to black, but is displaced by black. So with every change of qualities: they are exchanged, but do not themselves change. And no one would think of saying that black can change to white, and still less would one think of saying that, if black did change to white, it would still remain the same black. If one quality should become another, it would change through and through; and we should all regard it as absurd to speak of it as remaining the same quality after the change as before. But why is it any less absurd to speak of a thing as changing, and yet remaining the same, than it is to speak thus of qualities? The latter we never do, but the former we all do. Common-sense has never been content to accept the doctrine of an absolute exchange. This view would deny all continuity between antecedent and consequent, and would shut us up to pure phenominalism; in which, moreover, the phenomena would be phenomena of nothing. But the common notion of a changing, yet identical, thing is so hostile to the law of contradiction that we must make an attempt at its rectification. Can change and identity be reconciled; and, if so, how? This is the problem.

But, before attacking the problem, we must define more carefully the meaning of change. The very notion is said to involve a contradiction; and, if this be so, then, before reconciling it to other notions, we must reconcile it to itself. Change, in the abstract, may denote any and every change, including the most lawless and chaotic sequences, continuous and discontinuous. In this sense, change would be simply a departure from the present order in any direction whatever. But neither science nor philosophy understands by change a lawless and groundless sequence; for such a

conception would make both impossible. Both assume a causal continuity between the successive states of reality whereby each is founded in its predecessor, and, in turn, founds its successor. Both alike exclude the positivistic notion of antecedence and sequence as the only relation between past and future; for this view would reduce everything to an absolute and groundless becoming. In that case, the present would not be founded in the past, and would not found the future. All continuity would be dissolved, and every phenomenon would be a groundless and opaque fact. But even Heraclitus, who first taught that all things flow, and who made becoming the principle of existence, held that the preceding moments in the flow condition the succeeding, and that the course of the flow is subject to inexorable necessity; something as we might say that the laws of mechanics rule the ongoings of the physical universe. Fixity in the flow, marking out its channel and determining its bounds, was to him as prominent a principle as the flow itself. No more does the scientist or philosopher regard change as groundless; it must have both law and ground. Hence it is not a change of anything into everything, but the direction of change for everything is fixed. For physics we might formulate the doctrine of change as follows: A given element, A, may, under the proper conditions, pass into A_1, A_2, A_3, etc.; and, by reversing the conditions, we may pass from A_3 back to A again. Likewise another element, B, may, under the proper conditions, run through the series B_1, B_2, B_3, etc. C may pass through the series C_1, C_2, C_3, etc. From any member of the series, as a base, we can pass to any other, by properly arranging the conditions. But, throughout this process, there is nothing lawless and groundless. A can pass into A_1 only under some definite condition, and cannot pass into anything else under that condition. Hence change, in its scientific and philosophic sense, implies causal continuity of being, and is identical with becoming. The past founded the present,

and the present founds the future, but everywhere there are ground and law. We have now to inquire whether the notion of becoming involves contradictions. Our first aim will be to develop the doctrine of becoming; at a later period we shall inquire how far it is tenable.

The standing objection to the notion of change is, that it violates the logical law of identity, because change assumes that a thing can both be and not be at the same time. The Eleatic Zeno labored to show this by his celebrated paradoxes against the possibility of motion, and all later attempts have been but repetitions in principle of what he said. A first objection to this claim is, that it swells out the logical law of identity beyond its proper meaning. As a logical law, it demands nothing more than consistency in thinking; and, except in a derived sense, it has no ontological significance whatever. In its primitive meaning, it merely says that every object of thought shall have a definite meaning, and shall not be confounded with anything else. In itself, it does not decide whether change and motion are possible thoughts, but only that, if possible, they shall be kept separate from all other possible thoughts. If motion be conceived, it must be as motion, and not as rest. If change be thought of, it must be as change. If the absurd and contradictory are dealt with, it must be as absurd and contradictory, and not as rational and consistent. When the law is given any broader meaning than this, it brings thought to a standstill. In itself it is only the negative condition of thinking, and leads to nothing, without some positive principle, as the Megarians abundantly showed. But if we allow that the law of identity really contradicts the notion of change, it is plain that we cannot restrict its application to change in being, but must extend it to thoughts and relations also. A changing relation is no less a violation of the law of identity than a changing thing. If, then, we allow this law to forbid change in being, it must forbid all change whatsoever, and reduce the universe to a rigid, stony stare.

This was the position of the Eleatics, and it is the only logical one from their standpoint. Strangely enough, none of the other deniers of change in being have ventured to be equally logical, but, while denying change in being, have allowed change in relations without the least suspicion of the inconsistency. In truth, the law of identity can be played off against change only by showing that it contains distinct and irreducible contradictions. The attempt to show this we have next to consider.

The alleged contradictions in the notion of change all reduce to the charge that it implies that a thing can both be and not be at the same time, or, that it implies the union of being and non-being in the same subject. This claim rests upon a curious play on the word being. Being may mean the active, although the agent in acting may change itself, or pass into new states. This is the sense in which we have used it. But it may also mean an enduring and changeless substance, which is the common thought. Now if we should make becoming the absolute principle of existence, we should allow the reality of being only in the former sense. The members of the series A, A_1, A_2, A_3, etc., are all capable of acting and of being acted upon while they last, and hence they fill out the notion of being while they last. Now the objection to the doctrine of becoming, on the ground that the notion is contradictory, rests on overlooking this fact. The objector assumes that being can only signify an enduring and changeless substratum, while the disciple of becoming rejects this view entirely. We have a fine illustration of this oversight in Zeno's pretended disproof of motion. He assumed that at every instant the flying arrow must be in a definite point, and hence must be resting in that point. But, if resting, it is not moving, and cannot move. The fallacy here is palpable. It confounds being in a point, in the sense of resting in it, with being in a point in the sense of passing through it. But only that rests in a point which remains in it for some consecutive instants.

That which is passing through a point is not resting in it. Hence, to rest in a point and not to rest in it do not form a complete disjunction. The third possibility remains of motion through the point. A similar oversight occurs in the objection to change in general. When it is said that a thing must be either A or non-A, it does not exclude the third possibility, that A is becoming non-A. If we make becoming the absolute principle, nothing ever is, in the sense of a fixed existence, but is constantly becoming. The process alone abides; its phases are forever coming and going. The outcome of these logical objections is, simply, that neither motion nor change can be defined in terms of anything except itself, or deduced from anything more ultimate. Zeno sought to construct motion from a series of successive resting positions, and, of course, failed in the attempt. Every definition of motion and change either contains the thing to be defined, or constructs them from resting and changeless elements. In the former case, we have a tautology; in the latter, a contradiction.

The Heraclitic conception of being as a flowing process may be illustrated by the case of variable motion. In this case, the moving body never has a fixed velocity for any two consecutive instants, but is constantly acquiring one; and we measure its velocity at any instant by the space it would pass over in the next instant, if its velocity should instantly become uniform. Now at any indivisible instant the body has a fixed velocity, but this fixed velocity is incessantly changing to another. We might say, therefore, that the velocity never is, but perpetually becomes. Again, a point moving in a curve has a fixed direction for only one indivisible instant—that is, for no time; but we define its direction to be that of the tangent-line to the curve at the point, and instant, of measurement. For purposes of calculation, we say that the point moves in a straight line for an infinitesimal distance, but, in truth, the point never moves in a straight line. Now, in this case, we must say that the

point has a fixed direction only for an indivisible instant. Any direction which it may have at any instant is incessantly giving place to another. We may say here, again, that the direction of the point never is in the sense of enduring, but is forever becoming. This illustrates the conception of being which rules in the system of becoming. Nothing is in the sense of enduring, but is always becoming. There is perpetual coming and going; and as soon as a thing is, it passes, and gives place to its consequent. All being is comprised in an order of antecedence and sequence; and the antecedent must yield to its consequent, which, in turn, becomes antecedent, and likewise passes. There is nothing fixed but law, which determines the order and character of the flow. Even when there is seeming fixedness, as when A remains A, instead of passing into A_1, A_2, A_3, etc., thus producing the appearance of change;—even this is not to be viewed as an exception to the universal flow of being; but is to be regarded as a continuous reproduction of A, so that the series is as real as in the other cases; only being of the form A, A, A, there is no appearance of change. The A, in this case, is like a wave where two currents meet, or like a musical note. Both appear constant only because they are incessantly reproduced. Or it is like the flame of a lamp when undisturbed. It seems to be a resting thing; but it is only the phenomenon of a continuous process of combustion. We call it a thing, while it is really a process. In the case of the changing velocities, no one of them abides; that which is permanent is the order of change itself. So, in the doctrine of becoming, the process alone is permanent. The forms of the process, which we call things, are forever coming and going.

Now the objector who finds contradictions in the notion of change fails to notice the continuity and universality of the process. He seeks to find a permanent and changeless substratum in being, and, of course, has no difficulty in showing that change cannot be combined with such a factor.

But the disciple of Heraclitus denies the existence of any such factor. For him, all is changing, except the changeless laws of change. If A becomes A_1, the objector conceives A as first ceasing to be A, and then, after a void period, becoming A_1. Such a notion of change would, indeed, be absurd; but the Heraclitic holds no such view. He holds that A does not first cease to be A, and then become A_1, but it ceases to be A in becoming A_1; and it becomes A_1 in ceasing to be A; just as a body with variable motion does not first lose one velocity, and then acquire another, but it loses one in acquiring another. The losing and the acquiring are the same fact seen from opposite sides. So, also, the ceasing of A and the becoming of A_1 are the same fact seen from opposite sides. Seen from behind, it is the ceasing of A; seen from before, it is the becoming of A_1. Now it is only in this sense that change implies that A is both A and A_1 at the same time. There is no indivisible instant in which A rests as both A and A_1, but one in which A ceases to be A and becomes A_1; precisely as a moving point never moves with two velocities in the same direction at the same moment; but, in an indivisible instant, it ceases to move with one velocity and begins to move with another. But the fact that the one indivisible flow divides itself for our thought into two factors—a ceasing and a becoming—involves no more contradiction than the fact that the same curve is both concave and convex when seen from opposite sides. Of course, it is impossible to construe this process in thought, and tell how the one ongoing may present these two factors; but it is no more mysterious than being itself, upon any theory whatever. And, just as we do not insist that the Eleatic shall tell us how his resting, staring being is made, or is possible, so we have no more right to insist that the Heraclitic shall tell how his becoming is made, or is possible. All that can be demanded in either case is, that the conception shall be consistent, though mysterious, and shall be forced upon us by the facts.

The other form of the objection, that change implies the union of being and non-being in the same subject, needs only a word. So far as this is not identical with the preceding objections, it is a mere play on words. The being and the non-being, which are united, are not being and absolute non-being, but only relative non-being. Thus, in the series A, A_1, A_2, etc., the being of A is the non-being of the rest of the series; and we might say that A unites in itself its own being and the non-being of A_1, etc. But such a statement would be only a barren truism. The being of anything whatever is also the non-being of everything incompatible with it. So far as the objection has any significance, it affirms that A, in changing, must be both A and A_1; that is, A and non-A at the same moment; but in this form it is identical with the objections of the preceding paragraph.

Thus far we have not aimed to establish the doctrine of becoming as a metaphysical principle, but only to develop it, and to defend it against some patent misunderstandings. The tenability of the doctrine, and also some other objections, will come up hereafter. We return now to the problem with which we started, Can change and identity be reconciled; and if so, how?

The Eleatics denied the possibility of reconciliation. Either, they held, excludes the other; and as being was the exclusive category of their system, they denied the reality of change. This view has been partially reproduced in modern times by Herbart. The Hegelians, also, have held to the necessary contradiction between change and identity, but only with the aim of illustrating their principle, that all reality consists in the union of contradictions. All definite existence, in their view, is formed by the union of being and non-being. The solution of the difficulty furnished by spontaneous and uncritical thinking consists in the notion of a changeless thing with changing states or changing qualities. These change, but the thing remains constant. We have in this

popular view a division of labor similar to that in the popular conception of being. There we had a rigid core of duration, which simply existed and supplied the being. In addition to this, there was a certain set of forces, in somewhat obscure relations to the being, which furnished the activity. Here we have the same core of duration, which provides for the identity, and a swarm of conditions, states, and qualities, which look after the change. The identity is located in the core of being, and the change is attributed to the states and qualities. Without doubt, the children of the dragon's teeth will find in this view the final utterance of reason and an end of all discussion; but, still, we must insist that this conception of the changeless thing with changing states is only a spontaneous hypothesis of the mind, whose adequacy to the work assigned it must be inquired into.

A moment's reflection serves to show the untenability of this popular view. A state of a thing is not something externally attached to the thing, but is really a state of the thing, and expresses what the thing is at the time. Any other conception throws us back into the external conception of inherence, which we have rejected, and makes the thing useless as an explanation of its states. For, if the thing itself does not change in the changes of its states, there is no reason why the states should change, or why their changes should follow one direction rather than another. The thing itself must found and determine its changes, or they remain unfounded and groundless. But, to do this, the thing itself must undergo an essential change; for if A remain A, instead of becoming A_1, there is no ground why any of the manifestations of A should change. The external change must be viewed as the external manifestation of an internal change. A change between things must depend upon a change in things. Now when we remember that the only reason for positing things is to provide some ground for activity and change, it is plain that the changeless core

is of no use, and must be dropped as both useless and unprovable. It will, indeed, go very hard with the dragon's children to give up this core of rigid reality, but even they may free themselves from the delusion by persistently asking themselves what proof there is of such a core, and of what use it would be, if it were there. There is no help for it; if being is to explain change, change must be put into being, and being must be brought into the circle of change. In what sense a thing remains the same we shall see hereafter; here we point out that it is impossible to reserve any central core of being from change, but being must be viewed as changing through and through.

Another attempt to solve the problem differs in word rather than in meaning. This theory assumes that things, in themselves, are changeless, but their relations change, and thus there arises for us a changing appearance, which, however, does not affect the underlying realities. This is the common view of physicists. It resolves the phenomenal world into an appearance, and places a mass of changeless and invisible atoms beneath it. This, like the previous view, is sufficient for practical purposes, but it is equally untenable, for that change of relations must be accounted for. If we conceive these changeless elements in a given relation, A, there is no reason why they should ever pass into a new relation, B. Conversely, if they do pass into the new relation, B, this is thinkable only on the supposition of a change in the activity of some or all of the elements; and this, as we have seen, implies a change in the things themselves. Without this admission, the relations remain independent of the things, and unexplained by them. It is impossible to find relief in this conception.

The same criticism applies to Herbart's notion of "accidental views" (*zufällige Ansichten*). According to him, the changes of things are only in appearance, and are due entirely to the changing position of the observer. Thus the same line might be a side, a chord, a tangent, a sine, a

cosine, or a diameter, according to its relation to other lines, and yet it would be the same line in all these relations. The relations would be accidental. According to the position of the observer, therefore, the same thing may appear in widely different relations, yet without any change in itself. The change, then, is phenomenal and accidental, rather than essential. But this view, when applied to the external world, is utterly incredible. It denies all change in the substantial universe, and reduces the manifold changes of the system to occurrences in us. But, even if this view were credible, the difficulty would not be escaped, but transferred. Change would be removed from the outer world to the inner; but, as the knowing mind also belongs to the realm of being, and is, indeed, the only being of which we have immediate experience, the difficulty remains the same. Apart, then, from the inherent incredibility of Herbart's view, it fails to meet the purpose of its invention. The same considerations apply to the proposition to view change simply as a succession of phenomena, as when qualities succeed one another, or when images succeed one another on a screen. It may be that the physical world is only a succession of phenomena in our minds; but that succession must be caused by something, and perceived by something; and thus the change, which is eliminated from the phenomena, must be found in the producing agent and in the percipient mind. We may, then, locate the change variously, but it is strictly impossible to eliminate change from being, or to reserve any core in being from the cycle of change. We are forced to bring the substances of the universe into the stream of change, and resign them, in some sense, to the eternal flow. Being is process. Things are forever proceeding from themselves, and, in proceeding, they become something else.

We cannot eliminate change from being, but may we not find it possible to eliminate identity from change? If we hold the irreducible hostility of change and permanence, we may, with the Eleatics, deny the change; or, we may, with

Heraclitus, deny the permanence. The former view proves untenable; it remains to examine the latter.

Since the time of Heraclitus, some philosophers have inclined to this view, and have denied all elements of permanence and identity of any sort. All things flow and pass. But, in this extreme form, the theory is intelligible and possible only because it is false. In speaking of the Eleatic theory, we pointed out that, if being were strictly changeless, even the illusion of change could not arise. Here we point out that, if all things flowed, even the illusion of identity would be impossible. There must be some permanent factor somewhere, to make the notion possible. A flow cannot exist for itself, but only for the abiding. The knowledge of change depends on some fixed factor, which, by its permanence, reveals the change as change. If, then, all things flowed—the thinking subject as well as the object—the doctrine itself would be psychologically impossible. It is commonly overlooked by speculators, that succession and change can exist, as such, only for the abiding. Something must stand apart from the flow, or endure through it, before change can be conceived. Hence, as a matter of theory, we must have, at least, an abiding or permanent knower, to make the theory intelligible; and, as a matter of consciousness, we have immediate experience of such a knowing subject—the conscious self. In what this permanence consists we shall see hereafter. Our previous criticisms show that it cannot consist in any rigid core of being.

But, before going further, some objections must be considered, which have long been struggling for utterance. It will be said that, in the series A, A_1, A_2, etc., A_1, A_2, etc., are all states of A, and that A is the same throughout. The answer is, that A_1 is no more a state of A than A is a state of A_1 or of A_2, etc. Which of these forms shall be taken as the base depends upon experience. When a given form is familiar to us, we regard it as the thing, and other possible forms as its states; but, in truth, any one form is as

much the thing as any other. Thus we view water as the thing, and speak of ice and vapor as states of water; but, in fact, ice and vapor are no more states of water than water is a state of them. But here it will be further urged that, through all these states, the substance remains the same. It is the same essence of being which appears now as A, and now as A_1, etc. But we have seen, in the previous chapter, that the essence itself is nothing but the concrete law of action, and that there is no rigid core of being in the thing. Hence the identity of a thing does not consist in a changelessness of substance, but in the continuity and constancy of this law. In further criticism of the objection, we must ask what is meant by sameness; and, for the sake of progress, we venture the following exposition: A, under the appropriate circumstances, can run through the series A_1, A_2, A_3, etc. B runs through the series B_1, B_2, B_3, etc. C runs through the series C_1, C_2, C_3, etc. Now, as long as we remain in the physical realm, these series can be reversed by reversing the conditions, so that from A_n we can recover A. But, in thus reversing the series, provided all the other conditions remain the same, there is a complete quantitative and qualitative equivalence between the members restored in the regress and the corresponding members lost in the progress; that is, A_m will be in all respects the same, whether reached by a progress from A_{m-1} or by a regress from A_{m+1}. The indestructibility of matter means nothing more than the possibility of working these series back and forth without quantitative loss. When it is made to mean more, it is always on the strength, not of facts, but of some alleged intuition into the nature of substance. Now the only sense in which A_1 is the same as A, or in which the substance of A_1 is the same as that of A is, that A_1 can be developed from A, and, conversely, A can be developed from A_1. There is a continuity between A, A_1, A_2, etc., which does not exist between A, B, and C, and that continuity is the fact that A_1, A_2, etc., can be developed from A, and not from B or C.

These, in turn, can only produce B_1, B_2, etc., or C_1, C_2, etc. Without doubt, the disciple of the senses will fancy that there is a core of being which holds A_1, A_2, etc., together, and differentiates them from B and C; but this fancy has been sufficiently considered. Such a core explains nothing to the reason, and is only an embarrassment. We repeat, then, that in ontology a thing in different states is the same only in the sense of a continuity of law and relation. Absolute sameness or changelessness is impossible in reality. This conception of sameness is incompatible with change of any kind, and must be repudiated.

Here some verbal objections appear. It will be said that our very language condemns our theory. We are constantly recognizing the existence of something which changes, and thus, in spite of ourselves, we do homage to the truth of being. But this objection does not dismay us. The thing which changes is the changing thing. When, in the series A, A_1, A_2, etc., the change is from A to A_1, A is the thing which changes. When the change is from A_2 to A, or to A_3, A_2 is the thing which changes. Hereupon, in complete forgetfulness of what was said in the last paragraph, the objector will break out that it is the same thing which changes throughout. We reply, that it is the same only in the sense explained. It may be further urged that our theory does away with being altogether. A exists only for an instant, and gives place to A_1, and hence the element of permanence, which is an essential element of being, is not provided for. Nothing really exists, but is about to exist. This objection, also, is only a repetition of an error already considered. It defines being as a permanent substratum, and fails to notice that this definition is only a spontaneous hypothesis of uncritical thinking, and one which will not stand the test of criticism. Permanence of some kind there must be somewhere in being, but the nature of this permanence, and the place of its location, do not yet appear. We have defined being as whatever can act in any way, even for the shortest time;

and, in this sense, the members of the series A, A_1, A_2, etc., have being so long as they act. When one member passes into another, its being becomes the being of the other. A acts as long as it exists, and A_1 acts as long as it exists. Again, it will be said that this view implies that being can become non-being, which is unthinkable. This is a mere quibble. The view does not imply that something becomes nothing, or that nothing becomes something, but that something becomes something else. A does not become nothing, but A_1; and A_1 is not developed from nothing, but from A. How this can be we do not pretend to know, but the conception is forced upon us by the plainest facts and the simplest kind of reasoning. Without doubt the disciple of the senses thinks he knows how being can be; his great puzzle is to know how being can become. But his knowledge is imaginary, and his puzzle is no greater than obtains with reference to every ultimate fact. Inconceivability is no argument against anything, provided the facts call for it and the conception be consistent. This is especially true when the alleged inconceivability is only the product of mental paralysis or ossification.

But our view of change suggests another difficulty, as follows: If A really becomes A_1, and ceases to exist as A, the unity of the thing seems to disappear, and A, A_1, A_2, etc., appear as different things. This difficulty we have now to consider. The charge that our view cancels the unity of the thing rests upon the assumption that A is composed of A_1 plus A_2, etc. In this case, A would not be a unit, but the sum of A_1 plus A_2, etc. But this view is an error. When A exists, it is simply and solely A, and A_1, A_2, etc., have no existence whatever. A is strictly a unit, but such a unit that, under the proper circumstances, it becomes A_1. A_1, again, when it has become, is the only member of the series which is real. It does not contain A concealed within itself; it is purely itself. Misled by the Aristotelian notions of potentiality and actuality, speculators have largely

assumed that A_1, A_2, etc., exist preformed and potentially in A; but this means only that A is such, not that it will develop A_1, A_2, etc., but that it will develop into them; and when developed into them, it is A no longer. In any other sense, potential existence is no existence. We may say, rhetorically, that the oak exists in the acorn; but, in truth, the oak does not exist at all, but an acorn exists. This acorn, however, is such that, under the proper conditions, an oak will be developed. The phrase potential existence is due to an effort of the imagination to comprehend how one thing can develop into another; and the fancy is entertained that the problem is solved if we conceive the future development to be already concealed in the present reality. But, in fact, this view denies development; for, in the case assumed, there is no development, but only a letting loose of potentialities, which are also, and always, realities. Where there is a true development, the thing developed absolutely becomes. This notion of potentiality in no way enables the mind to comprehend the process, which, like being itself, is utterly inconstruable. It is something to be recognized and admitted rather than comprehended. The phrase potential existence may be allowed in rhetoric, but it is utterly misleading in metaphysics. Our doctrine of change, therefore, does not conflict with the unity of the thing, for the thing is never A and A_1 and A_2 at the same time, but only some one member of the series, and, as such, is one and indivisible.

But this makes the other part of the objection still more prominent. How can A, A_1, A_2, etc., be distinguished from a series of different things? They do, indeed, follow one another according to a certain law, but each ceases to be when its consequent begins. A_1 is not A, although it is produced from A, no more than ice is water because it can be produced from water. It is not meant that these different things are externally produced, for they really proceed from one another; but when they are produced, they are

different things. The members of the series A, A_1, A_2, etc., are related as cause and effect, although, by reversing the conditions, any one may be cause and any one may be effect. But there is no reason for affirming any further unity in the series than this; and there is no reason for declaring that they are only different states of one and the same thing. One member is as much the thing as any other, and one member is as much a state as any other. And, since the notion of the same thing in different states is well calculated to mislead us, we point out that, in a system of absolute becoming, this notion of a state is inapplicable. To warrant its use, there must be some permanent factor, which can abide through the changes, and distinguish itself from them. But in this system there is no such factor. Indeed, the conscious self is the only thing we know of which is capable of having states. It distinguishes itself from its affections, and affirms itself as abiding through them. But, where all is flow, the thing and the state vanish together; and we cannot speak of the next member as a state of the preceding, for the preceding member has disappeared. A permanent factor of some sort is necessary, to justify the conception of one thing with various states; and thus it becomes still clearer that A, A_1, A_2, etc., must be regarded as different things, having no other connection than a mutual interconvertibility according to a certain law, like the various forms of energy.

And here we must say that the conception is sufficient for all purposes of science and daily life. The possibility of working the series back and forth, under definite conditions, without quantitative loss, is all that the physicist needs to know. Whether it be the same substance throughout the series, or substance incessantly reproducing itself according to a fixed law, is quite indifferent to physical science. Doubtless it would not be difficult to find some one with an "intuition" of the absurdity of the latter view; but intuitions are seldom resorted to, unless argument fails. Cer-

tainly no one whose opinion deserves attention will claim any intuition on this point. Thus we fall back again into the doctrine that all things flow. Reality is incessantly reproducing itself, either in the form A, A, A, thus producing the appearance of permanence, or in the form A, A_1, A_2, etc., thus producing the appearance of change; but the flow is as real in one case as in the other. Now in the series A, A_1, A_2, A_3, etc., which is the thing? We cannot make the thing the sum of the series, for that would destroy the unity of the thing, and would imply that all the members of the series co-exist. The truth is, that each member is the thing, whenever that member acts, and the several members are the same thing only in the sense that each may be developed from the other. In any other sense they are different things. Conceived ontologically, everything changes to its centre, and, by changing, becomes something else, similar or dissimilar.

The current notion of a thing, we have said, is that of a changeless thing with changing states. The changelessness we have been forced to give up; we have now to abandon the conception of states. The same thing, ontologically, cannot exist in different states, for, in taking on a new state, it becomes a new thing. It may be that we shall somewhere find something which is capable of existing unchanged through its changes, and of distinguishing itself from those changes as its states; but we cannot find it in the realm of ontology. As long as we confine ourselves to reasoning on the notion of being, and view it as the subject of activity and change, we are forced to identify it with its phases, as long as each one lasts. We may illustrate this by the conservation of energy as rhetorically understood. In the correlations of energy, there is nothing which glides unchanged from one phase to another, but each phase expresses the entire energy as long as it lasts; and when it produces a new phase, it vanishes into its effect. Nothing is constant but law and numerical relation. So a thing, viewed ontolog-

ically, is identical with its phases while they last, and when it passes from one to another the cause disappears in the effect. We have next to add that this separation of phases is largely arbitrary. In the series A, A_1, A_2, A_3, etc., any one member is as much the thing as any other; but these members are only arbitrary units in a continuous process, like the moments into which we divide time. Time is not composed of moments, but is strictly continuous. So the process which we call a thing is also continuous, and the sections into which we divide it are only products of our thought. A, A_1, A_2, A_3, etc., are only segments of a process which appears now as one member of the series, and now as another. It cannot be detained as any one, and it no sooner comes than it goes. Being in incessant progress, it forces itself from form to form, nor tarries in one stay. This is the conception of being which rules in all systems of philosophical evolution. Being is perpetual process, and exists only in its incessant procession. Motion and change are omnipresent. Things as they appear are only stages of the eternal flow, or transient eddies in the flood. The incessant weaving is attended by incessant unweaving, and sooner or later all things pass, except the procession of being itself. Purely ontological thinking can come to no other conclusion.

But how can there be any fixed system of law in such a flow? If everything passes, law itself should pass; for no one would imagine that law has an independent existence apart from reality, and rules it as an external sovereign. We reply that law itself is only an abstraction from the form of a thing's activity. The law is not first, and the obedient activity second, but the active, changing reality is first and all, and, by the definite form and sequence of its activity, it founds the abstraction which we call law. We conceive reality, therefore, to be perfectly definite at each instant, and as shut up to a perfectly definite line of movement. This definiteness is the source of all that we call law.

But it is high time to inquire after the permanent and identical. We have gone so far with Heraclitus that we seem to have left no place for permanence and identity; and, in truth, if we had been left merely to think upon the question, we should probably never have found any escape from the eternal flow. Fortunately, as in the case of unity and diversity, experience comes to our aid, and shows that reality has solved the problem which speculation has failed to master. In personality, or in the self-conscious spirit, we find the only union of change and permanence, or of identity and diversity. The soul knows itself to be the same, and distinguishes itself from its states as their permanent subject. This permanence, however, does not consist in any rigid sameness of being, but in memory and self-consciousness, whereby alone we constitute ourselves abiding persons. How this is possible there is no telling; but we get no insight into its possibility by affirming a rigid duration of some substance in the soul. The soul, as substance, forever changes; and, unlike what we assume of the physical elements, its series of changes can be reversed only to a slight extent. The soul develops, but it never undevelops into its former state. Each new experience leaves the soul other than it was; but, as it advances from stage to stage, it is able to gather up its past and carry it with it, so that, at any point, it possesses all that it has been. It is this fact only which constitutes the permanence and identity of self.

Here it will be urged that this view is only another form of Locke's theory, which made identity to consist in memory; and as Locke's view was exploded, even in his own generation, our view may be regarded as demolished in advance. The objection to Locke's view is, that memory does not make, but reveals, identity; and, if Locke denied the continuity of being in the sense in which we have explained it, the objection is fatal. Memory does not make, but reveals, the fact, that our being is continuous. If our being were

discontinuous, or if we were numerically distinct from ourselves at an earlier date, memory would be impossible. But we have seen that continuity is not identity. It is itself a flow, and means only that the being which now is has been developed from the being which was. This is all that is commonly meant by identity. But the question we raise is, how to bring a fixed factor into this flow, and thus raise continuity to proper identity or sameness. And this can be done only as the agent himself does it; and the agent does it only by memory and self-consciousness, whereby a fixed point of personality is secured, and the past and present are bound together in the unity of one consciousness. The permanence and identity, therefore, are products of the agent's own activity. We become the same by making ourselves such. Numerical identity is possible on the ontological plane; but proper identity is impossible, except in consciousness.

At first view, this position is an extravagant, and even absurd, paradox; but we must remember that the soul, as substance, comes under the perpetual flow. We are not conscious of a permanent substance, but of a permanent self; and this permanence is not revealed, but constituted by memory and self-consciousness; for, if we abolish them, and allow the soul to sink to the level of an impersonal thing, identity is degraded into continuity, and permanence passes into flow. Consciousness, then, does not simply reveal permanence in change; it is the only basis of permanence in change. Of course, we do not pretend to tell how personality is made; we leave that for the disciple of the senses. He finds no difficulty in manufacturing a person by simply providing a lump of rigid substance, and then stocking it with divers faculties. But, while nothing can exceed the cheerfulness with which we admit that we cannot construe the possibility of personality, nothing, also, can exceed the stubbornness with which we deny that the rigid substance furnishes the least insight into the possibility.

If, then, the idea of being must include permanence as well as activity, we must say that only the personal truly is. All else is flow and process.

These results are so paradoxical, and so easily misunderstood, that a final caution must be added. In general, common-sense understands by identity merely numerical identity, or continuity of being. In this sense we, also, affirm identity, and agree entirely with spontaneous thought. But the question we raise lies inside of this numerical identity. The thing which is thus numerically identical and continuous is itself discovered to be a flowing principle of action; and here our break with the current view begins. Common-sense aims to secure identity in diversity by the doctrine of a permanent or changeless thing with changing states; and this view we have been forced to reject. Change penetrates to the centre of the thing, and the only thing which is permanent is the law of change. Reality, then, is process, and yet not a process in which nothing proceeds; for being itself proceeds, and, by proceeding, incessantly passes into new forms, and changes through and through. If, by being, we mean something which unites identity and diversity, we must say that the personal only is able to fill out the notion of a thing. And the conception of a permanent thing with changing states is founded as conception, as well as realized in being, by the fact of the personal self. Indeed, the ontological categories are themselves nothing but shadows of the living realities of personal experience; at least, they have a representable meaning nowhere else. Only in our own activity does the category of action acquire any concrete significance. Only in the unity of consciousness can the category of unity be realized. In the consciousness of self as identical throughout change we have the only example of identity in change. Apart from their realization in experience, none of these categories have more than a formal meaning; and they defy all attempts to conceive them in their abstract significance. The Kantian

schemata, which were invented to make this possible, distort the categories rather than represent them. Instead, then, of interpreting personality from the side of ontology, we must rather interpret ontology from the side of personality. Only personality is able to give concrete meaning to those ontological categories by which we seek to interpret being. Only personality is able to reconcile the Eleatic and Heraclitic philosophies, for only the personal can combine change and identity, or flow and permanence. The impersonal abides in perpetual process. It may hereafter appear that the impersonal is only a flowing form of activity, to which, because of its constancy, we attribute thinghood, but which is, in reality, only a form of the activity of something deeper than itself. If this should be the case, the conclusion would be that the absolute person, not the absolute being, is the basal fact of existence.

CHAPTER IV.

ACTION AND INTERACTION.

THE common theory of the system is, that a plurality of independent things exists, and that each of these has its own hard and fast self-identity and individuality. The conclusions of the previous chapter leave these elements untouched. Being is indeed process; but this process is individual, and it may be independent. But such beings cannot form a universe. Each thing, being one and independent, must be indifferent to all the rest. The result would be a sum, not a system; an aggregate, not a whole; and even these characters would be due to the observing mind. But popular thinking, especially in its scientific form, is equally possessed of the conviction that things form a true system, and that the place and functions of the individual are determined by its relations to the whole. In order to overcome the mutual indifference implied in the absolute self-dependence and individuality of things, things are supplied with various forces whereby they interact and determine one another, and thus constitute a system. This conception of independent things in mutual interaction is the device whereby spontaneous thought seeks to reconcile the opposition of individuality and community; it is the answer of common-sense to a great speculative problem. Absolute individuality sets everything apart in a self-sufficiency of being, while existence in a system implies some community of being. The underlying aim of this chapter is to inquire whether individuality and community of being can be reconciled, and, if so, how. But to do this

we must inquire into our notions of action and interaction.

Action may be either immanent or transcendent. In the former case, the agent acts upon itself; in the latter, it acts upon something else. Thinking is a case of the former; attraction or repulsion is a case of the latter. To this transcendent action we give the name of interaction. In immanent action, the agent determines its own state; in interaction, one thing is determined by another. The idea of action, or causation in general, is more extensive than that of interaction; so that the latter is only a special case of the former. Causation includes all action, whether creative, or immanent, or transcendent; while by interaction we mean only the determination of one thing by another. This conception of mutual determination exhausts the notion of causation so far as it is of use in science. The scientist, as such, has nothing to do with creation. He views nature as given, and seeks to find the order of its changes and the interaction of its parts. But this interaction creates no substance, but causes new states. The physicists are fond of saying that the indestructibility of matter is the corner-stone of their faith. The presence of elements in the state we call heated determines a repulsion among the elements of water or gunpowder. The presence of a magnet under proper conditions will determine a bar of iron to assume the magnetic state. In such cases we speak of the determining body as the agent or cause of the effect; and this determination is the whole of causation in its scientific sense. We propose in the present chapter to confine our attention chiefly to the problem of interaction. The inquiry is, How is interaction, or transcendent action, possible? Of course we do not hope to construe the process, but only to find its necessary implications. Possibly we may find that all apparently transcendental action is but a special case of immanent action. The discussion of this question will enable us to solve the other problem of the reconciliation of individuality and community.

But before advancing to the problem itself we must render our terms more precise. The notion of determining has a causal and a logical significance, which should be distinguished. Causation implies determination, but not conversely. Thus the premises determine the conclusion; and the sides and angles of a figure mutually determine each other. Again, we might say that the fundamental equations of dynamics determine all the possibilities of physical force and motion; or that the axioms and intuitions of space and number determine the whole science of mathematics. Yet in none of these cases is there any action. The determination is the logical determination of ideas; and their relations are as fixed as truth itself. Hence philosophers have made a distinction between cause and effect, and ground and consequence. The former denotes a dynamic sequence; the latter denotes a logical one. By this, however, is not meant that the dynamic sequence is illogical or irrational. On the contrary, we must hold that if the nature of the interacting causes could be fully grasped in thought, we could logically deduce their necessary resultant. We have such a case in the mechanics of the solar system. There we know with sufficient accuracy the nature of the forces at work; and we are able to tell what they will do. The principle that only the definite can produce the definite, or that like antecedents must have like consequents, compels this admission. By this principle, given causes are shut up to given effects; and hence a complete knowledge of the causes enable us to deduce the effects. But this principle leaves us as far as ever from knowing how interaction is possible. It merely tells us what the outcome will be if the members interact. Thus, the mechanics of the solar system do not tell us how the planets can attract one another, but what will happen if they do attract. The possibility of the attraction is assumed and left totally unexplained. The dynamic sequence, therefore, is logical; but it is also something more. It is a movement in reality and not merely in thought. The logical

sequence, on the other hand, is only a logical sequence. It is only a movement in the thought of the reflecting subject; and as such depends entirely upon the thinking mind. If we conceive the present order simply as a thought-system, we could trace its entire outcome in logical sequence as far as we chose to follow it. A mind which could fully grasp reality in thought would be able to deduce all its implications. Such a mind would be independent of observation, and would need only logic. But the advance in such a case would be due entirely to the nature and unity of the thinking subject, which by its unity brings the several members together, and by its rational nature is able to develop their logical implications. But if the outer world be real, and the course of nature be a fact, this thought-movement must be set in reality, so that the thought is replaced by the thing, and the logical connection replaced by a dynamic one. The primary distinction, then, between cause and ground is that between a thing and a thought; and the basal distinction between effect and consequence is that between a dynamic result and a logical conclusion. The thing is able to exist and maintain relations apart from our thinking; the thought exists only as it is thought. The dynamic process goes on without us; the logical conclusion exists only as it is drawn. Logic rules in both realms with absolute supremacy; but in one case it is logic set in reality, in the other it is logic controlling the movement of our thought.

In addition to this primary meaning, ground and consequence have a secondary one. By cause we always mean an agent of some sort; but there must be some ground why the agent acts as it does. Logic is not content with reaching the agent, but asks for the ground of the peculiar form of agency. It analyzes the agent, and finds the ground of its peculiar action in the agent's nature and relations. But this nature, though determining, is never causal. The nature of the mind does not cause it to unfold and act as it does, but the mind is determined in itself to its peculiar manifes-

tations. The subtlest form of moral determinism avails itself of this conception. The mind is viewed not as coerced into this or that, but as essentially determined to it; so that without compulsion there is still absolute necessity. Spinoza carried this notion so far as to identify freedom and necessity. Everything is free when not externally coerced; but where there is no coercion, there is still complete determination. As the intellect, when the premises are clearly grasped, moves fate-like to the conclusion, so the will is at once fated and free. Thus logic penetrates beyond the cause and asks for the ground as well.

We may say, then, that the cause of an effect is the agent which produces it. The ground is that factor in the cause and its relations whereby it is able to be the cause of this particular effect. Thus oxygen and hydrogen are the agents which produce water; but if we ask for the ground of this production, we shall find it in neither, but only in both—in their peculiar natures and in their peculiar relations to each other. This thought has been pushed so far by Leibnitz as to lead to the conclusion that the complete ground of any event can be found only in the entire system. For in a system of interacting things, where every thing determines every other thing and is determined by every other thing, every thing is what it is, and does what it does, only as a member of the system. It does not have its properties in itself, but only as a part of the whole. Hence, though the agent in any case is some particular thing, the ground of its agency, or that factor which makes the particular form of agency possible, is to be found only in the system as a whole. The tendency of one form of pantheistic speculation is to destroy this distinction between cause and ground, or rather to reduce cause to ground; so that the universe is not viewed as a plan and act of God, but as a logical implication of the world-substance. And since logical sequences coexist with the premises, the eternal world-substance implies its logical consequences in eternal coexistence. This

tendency finds its classical expression in Spinoza's system. In treating of time we shall see more clearly the difficulty of keeping cause distinct from ground.

This relation of cause and ground explains the distinction made by popular thought between the cause and the conditions of an effect. We have seen that in the system the complete ground of an event never lies in any one thing, but only in a complex of things. If a single thing were the sufficient ground of an effect, the effect would coexist with the thing, and all effects would be instantaneously given. Hence all effects in the system must be viewed as the result of the interaction of two or more things. This doctrine, first made prominent by Herbart, has been rendered familiar to English thought by Mill; and may be viewed as generally accepted among thinkers. But popular thought prefers to explain the fact in another way. The cause of an effect is supposed to be single; but it is conditioned in its working. There are, then, causes and conditions of effects. The most prominent factor is commonly singled out as the cause, and the others are degraded into conditions. In practice, this distinction is not without value; but in theory it is untenable. All conditions are co-operating causes, and nothing is a cause which cannot produce its effect. Under the influence of the law of identity, we carelessly call that which may cause an effect under certain conditions a cause at all times; and then we shift the hinderance to the conditions. But the inner discord of this notion is palpable. It is quite absurd to call that the cause of an effect which, when left to itself, is unable to produce it. Of course, the thing must always be such that when all the conditions are fulfilled, the effect will follow; but it does not follow that the thing is the sufficient cause of the effect at other times. To become this, it needs the co-operation of other agents. It does not help to call these other things conditions; for if they are to contribute anything to the result, they must themselves be causes. They must be able to determine the

interacting things to an efficiency which they would not otherwise have; and this is just what is meant by causation.

We next inquire what is meant by an effect. Remaining still in the realm of interaction, we point out that an effect in this realm is not creation, but some form of change. Things are not created and destroyed in their interactions, but they pass into new conditions. The change is the effect. This change may be both phenomenal and noumenal, or a change in appearance and a change in being. The change in being is the primal effect; and the phenomenal change is but the translation of this first effect into the forms of sense. All changes which appear among things are the result of changes in things. For being itself the reflective reason never asks a cause, unless the being show marks of dependence. It is change which first gives rise to the demand for cause. If this be so, the untenability of Hamilton's view of causation becomes palpable. According to him the law of causation depends upon our inability to conceive creation; and means, therefore, the eternal self-equality of being. This notion of causation at best applies only to creation and not to interaction. And if the effect be change, it gives us no insight to tell us that there has been no loss or gain of being; for the question is to know why being should take on new forms. That it is the same being in the new form does not explain the change; and yet this is the thing to be accounted for.

But, thus far, we have dealt only with the use and meaning of the words; the nature and possibility of the thing remain as dark as ever. We next pass to the problem itself, by asking, (1) How is immanent action possible? and, (2) How is interaction possible? The first question admits of no answer. Action, in every form, is as great a mystery as being itself, and admits of no deduction or comprehension. Like being and becoming, it cannot be compounded from simpler ideas, or in any way construed. The empiricists have sought to dispense with the notion, but, to do so,

have used the notion itself. Their scheme consists entirely in showing how beliefs might be caused, or produced, or determined, by experience. If there were no such thing as causation, their argument would be empty. Action, then, must be recognized, but cannot be understood. How a thing can act, how we ourselves can act, how a given state of any thing can be the ground of change in other things, or even in itself—all these are insoluble questions. How is it possible that, when certain conditions are fulfilled, oxygen and hydrogen unite to form water? There is no answer. A pretended answer would be, that they always have a tendency to unite, but that they are hindered by circumstances. When the hinderances are removed, they flow together as a matter of course. But this is imaginary. How do we know that they have any tendency, except when it is fulfilled? How do we know that the tendency and the act do not appear together? And, supposing they have a tendency, how does it pass from potentiality into act? The question remains the same; the answer is no answer. We have to content ourselves with the fact that action is possible without knowing how. At the same time, its possibility is no more mysterious than its impossibility. How can a thing act? How can a thing be? Both questions stand on the same plane; and both facts—that of action and that of being—have to be admitted as ultimate facts, which we can never rationally hope to comprehend. Here, again, experience solves for us the problem which reflection cannot master. Every one knows himself as active. We control and direct our own mental states, to a certain extent, at least, and, in so doing, we are conscious of ourselves as controlling. And this is our only experience of action. In the outer world we see sequence in phenomena, or mutual change, but no agency. That there is an agent producing these changes is no fact of experience, but a necessary assumption of the mind. Even in the case of our neighbors, we see only a succession of changes. That there is a controlling

self is not a perception, but an inference. Only in the case of our own mental action can we get behind the appearance to the source of action; and how we ourselves can act we do not know. But all external action must be assimilated to our own, or remain utterly mysterious. Conception, volition, and a sense of effort condition the only action of which we have any knowledge; but it is not clear that we are justified in viewing them as conditions of all action. At the same time, it is not clear that we are justified in excluding them from any action. Many philosophers have insisted that there can be no action without conscious volition. Berkeley urged this view as one reason for denying agency to matter. And it must be allowed that, when we try to conceive impersonal activity, it vanishes into sequence, and the notion of action perishes. Kant made antecedence and sequence the schema of cause and effect, as the only form under which causation can be represented to the mind, and the empiricists declare that causation is nothing more. Conscious action is the only action of which we can form any conception. If A is to react on B, in certain conditions, it must in some way become aware of those conditions, and if not consciously, how then? All is darkness in this direction. Action is a fact, and hence is possible. We know nothing more. We may add, however, that, though we hold that all activity is personal, we are not content to get the conclusion from the simple fact that we cannot picture impersonal activity. The argument from impotence warrants no positive conclusion.

Of interaction we have no proper experience whatever. That it is possible is no fact of experience, but a necessary mental affirmation. It may be thought that, in the case of volition producing physical motion, we have immediate experience of interaction between the soul and body; but this is a mistake. All we experience is that, upon occasion of a specific volition, certain physical changes occur, but of the nature of the connection we know strictly nothing. To be

sure, the physical state does not enter, except as a sequence upon the mental state; but why the one should be followed by the other, or what the nature of the bond may be, is as unknown as in the case of gravitation. We are often misled, at this point, by our sense-experience. We imagine that we feel our own power flowing over upon the body and controlling it. A certain sense of effort manifests itself, and we seem so to permeate the body that our own spiritual force comes in contact with the reality. But the sense of tension and effort in the muscles, in such cases, is but the reaction of the organism against the volition, and has merely the function of teaching us how to measure our activity. In itself, the will is as boundless and as passionless as the conception, and when the limits of physical possibility are reached, it is not the will which has failed, but the machine. We must say, then, that we have no proper experience of interaction, but only of antecedence and sequence. It remains a thought-problem rather than a datum of experience.

This brings us to our second question, How is interaction possible? At first, it would seem that this question is as insoluble as the other question, How is immanent action possible? And, since we allowed that no answer can be given to this question, is there any reason for attempting more in the case of interaction? We think there is a difference between the problems, which makes a different treatment necessary. The notion of interaction involves, in particular, one difficulty, which does not exist for immanent action. Every thing which is to act on some other thing must transcend itself. But how can a thing transcend itself, and act where it is not? Again, the common notion of a thing implies that it is self-centred, and has the ground of its existence in itself. But if a thing is to be acted upon by another thing, it must be determined from without as well as from within. The ground of its being, then, is not in itself

alone, but in other things as well. We have shown at length, in the previous chapter, that every definite manifestation implies a definite form of being, and, as in an interacting system, everything does what it does because of its relation to others, it follows that, in such a system, every thing is what it is only in relation to others. Here the individuality which spontaneous thought posits conflicts with the community which interaction posits. These difficulties do not exist in the case of immanent action, and they make the question of interaction a separate and peculiar problem.

The answers given to this question by popular thought are such only in appearance. For example, it is said that a thing transfers its state or condition to the thing acted upon, and this transference is the act. But this notion is due to hopeless bondage to the senses. It is simply one of the spontaneous hypotheses of common-sense, and gives a little comfort to the imagination. Action is conceived as a thing which may be passed along from one to another. But, when this view is taken in earnest, it meets at once the fatal objection that states, conditions, and attributes are nothing apart from a subject. As such, they admit of no transference. The adjective is meaningless and impossible without the noun. But the human mind has a persistent tendency to personify its abstractions; in particular, abstract nouns, which are much used, are sure to be mistaken for things. Thus the empiricist takes sensations which are never known except as states of a mental subject, breaks them from the only connection in which they have any meaning, and then parades them as the source of the mind itself. The facts which have led to this notion of transference of conditions are chiefly those of transmitted heat and motion. Here we see effects which may well enough be described as the transference of a condition. The moving body puts another body in motion, and loses its own. The heated body warms another, and cools itself in the same proportion. The magnet brings another body into the magnetic state,

and seems to have forced its own condition upon it. These are facts for interpretation. Spontaneous thought says that the agent, in such a case, transfers its condition; but this is only a description, not an explanation. Indeed, it is inexact, even as a description; for what we really see is propagation, not transmission or transference. A condition cannot be transmitted or transferred, because the notion of a state or condition without a subject is impossible in thought. The fact is, that the moving, or heated, or magnetic body, in some totally mysterious way, propagates its state. Of the inner nature of the process we know nothing, and the pretended explanation is only an indifferent description. Even in cases of impact the process is equally mysterious. We see the result, and fancy we understand the method; but there is nothing whatever in spatial contact to explain the results of impact, unless there be a deeper metaphysical relation between the bodies, which generates repulsion between them. Added to these considerations is the further fact that interaction does not imply that the effect shall be like the cause; and, in the mass of interaction, the effect is totally unlike the cause. A new condition is produced in the thing acted upon, but one quite unlike that of the agent itself.

Empty as this view of the transference of conditions seems, when looked at closely, it has still had a great influence in speculation. The famous phrase, "Only like can affect like," is the same view in another form. This pretended principle has found its chief application in discussing the interaction of soul and body, and both idealistic and materialistic conclusions have been based upon it. If one started with the reality of the body, the soul was degraded to material existence. If the soul was made the starting-point, of course it was impossible to reach a real body except by an act of faith. Hence, also, the occasionalism of the Cartesians and Malebranche's theory of the vision of all things in God. Now this maxim, that like affects only like,

is mainly based upon the notion that in interaction something leaves the agent and passes into the patient. On this assumption, we see the necessity of the maxim; for how could a material state pass into a spiritual being? and how could a spiritual state pass into a material thing? The spiritual state must partake of the nature of spirit, and the material state must partake of the nature of matter. The two, then, must be incongruous. Hence, it was concluded that body and soul could not affect each other. No more could any two things affect each other, so far as they were unlike. The only truth in this doctrine is, that things totally and essentially unrelated can never pass into relations of interaction, and, hence, that all true being must constitute a series, without any absolute oppositions. The real difficulty is, not to know how like can affect unlike, but how any two things can affect each other. Why should the state of one thing determine the state of another?

Another verbal explanation of the problem is found in the notion of a passing influence, which, by passing, affects the object. But the same objection lies against this view as against the preceding. If, by influence, we mean only an effect, we have merely renamed the problem; but, if we mean anything more, we make the influence a thing; and then we must be told, (1) what the thing is which passes; (2) in what this passing thing differs from the things between which it passes; (3) what the relation of the passing thing is to the thing from which it passes; (4) where the acting thing gets the store of things which it emits; and, (5) how the passing thing could do any more than the original thing from which it proceeds. An attempt to answer these questions will convince one of the purely verbal character of this explanation by passing influences. The great difficulty with many speculators is, to conceive how a thing can act across empty space; and hence they think, if something would go across the void, and lie alongside of the thing to be acted upon, all difficulty would vanish. They

make action at a distance the real puzzle in interaction. But, to reason, the difficulty is, not to act across empty space, but to act across individuality. If we conceive two things, viewed as independent and self-centred, occupying even the same point of space, we have not advanced a step towards comprehending why they should not remain as indifferent as ever. Contiguity in space helps the imagination, but not the understanding. It is plain that this notion of a passing influence is a mere makeshift of the imagination, which gives no light when taken in earnest.

Akin to this view is that current among physicists, according to which forces play between things, and produce effects. But this view is, also, a device of the imagination, and solves nothing. The fact to be explained, when reduced to its lowest terms, is this: When A changes, B, C, D, etc., all change, in definite order and degree. To explain this fact, it is said that forces play between A, B, C, etc. But here, as in the case of the influence-theory, the force must be either a mere name for a form of activity, or it must be a thing, and either alternative is inadmissible. If force be a mere name, it explains nothing; and, if it be a thing, it leaves the question worse than before. All the questions asked about the influence would arise about the force. Thus our difficulties are increased, and no insight is gained. Besides, we have seen that force is only an abstraction from the forms of a thing's activity. Things do not act because they have forces; but they act, and from this activity the mind forms the abstraction of force. To say that things are held together by their attractions is only to describe the fact. The attractions are nothing between the things, like subtle cords, which bind them together. They are merely abstractions from the fact that coexistent material things, in certain conditions, tend towards one another. They do not give the slightest insight into the fact or its possibility. Again, things are often said to have spheres of force about them; but this, too, is only a de-

scription of facts. The sole reality is things, and between and beyond them is nothing; but these things are not mutually indifferent, but are implicated in one another's changes. This relation may be illustrated as follows: If we conceive a perfectly elastic system in equilibrium, any permanent displacement of any part would demand a readjustment of all the other parts, in order to restore equilibrium. Thus, a change in any part would involve a change in all parts. The actual system implies a like community of being. The position and condition of each has a significance for the whole, and for any change in any one part there is a corresponding change in all the rest. But how can independent things stand in such relations of community and interaction? The scientific doctrine of forces which play between things merely describes the fact itself; taken as an explanation, it is grotesquely untenable. Indeed, the admission that these go-between forces are only abstractions from the fact to be explained reduces the physical theory to the harmony of Leibnitz. Each thing is supposed to be individual, and it gives and receives nothing. Things move in parallel lines, and that is all. But this is essentially Leibnitz's theory.

The notion of interaction being thus obscure and difficult, it has occurred to many speculators to eliminate it entirely from the system. These attempts are various. Mechanical physicists have largely sought to reduce all interaction to mechanical impact, in the hope of removing the difficulty. In particular, it has been imagined that the question of gravitation would be much simplified if attraction could be deduced from impact. But this attempt is a failure in physics, and a worse failure in metaphysics. We have already pointed out that impact, except in an interacting system, would be without result. The speculative attempts to discard the notion of interaction are, (1) occasionalism; (2) positivism; (3) nihilistic sensationalism; and, (4) the pre-established harmony of Leibnitz. We consider them in order.

The theory of occasionalism sprang especially from the difficulty of comprehending the interaction of soul and body. Descartes made the opposition between mind and matter so absolute that there was no longer any possibility of bringing them together. But, as they do seem to interact, his disciples invented the theory of occasional causes to explain it. According to this view, a change in A is in no way the cause of a change in B, but only its occasion. The excited nerve does not cause the sensation, but, upon occasion of an excited sensory nerve, a sensation arises. Conversely, volition does not cause any physical movements, but, upon occasion of a volition, the corresponding motion takes place. This view, if taken as a full and final account of the matter, is hopelessly insufficient. It leads at once to idealism. The outer world is posited by us only as the explanation of our inner experience; and as, by hypothesis, the outer world does not affect us, there is no longer any rational ground for affirming it. We can reach the world only by an act of groundless faith, or else, with Malebranche, by taking refuge in revelation. But, even if we stop short of this extreme, it is still untenable; for a change in A cannot properly be the occasion of a change in B without an interaction between them. If the change in B is not determined by A, then it has no ground whatever in A, and the two changes are not mutually occasioned, but their coming together is a groundless coincidence. In that case, the world presents a hopeless pluralism. A, B, C, D, etc., are all mutually independent, and their changes are all independent. Whatever of system there may be in the universe would be merely a coincidence, without ground, and without surety of any kind. The Cartesians themselves did not carry the notion to this extent. They had a real agent in the case, but viewed God as that agent. And even this view leads directly to idealism. The activities of matter are commonly conceived as purely external; and, by hypothesis, these external activities are not the activities of matter, but of God.

If, now, we view matter as without subjectivity, it has no activity whatever, and becomes nonexistent. It does nothing, and is nothing. Occasionalism is possible as a consistent system only between finite minds; and, even then, it would not do away with the general problem of interaction, for it would necessarily posit an interaction between the finite and the infinite.

The second view, that of positivism, regards all inquiry into causes as both fruitless and hopeless. This view would restrict us entirely to a study of phenomena. When we have the orders of coexistence and sequence among phenomena, we have all that is practically valuable in scientific study. We can then read the past, and previse and prepare for the future. All other knowledge is hidden; and it is a wicked waste of time to search for it. We can observe that A+B is followed by C; and this observation exhausts all that is valuable in the case.

As a rule for practical science, this conception is invaluable. It is practically indifferent whether we view foul air as the occasion, cause, or invariable antecedent of ill-health. The great point is to know that it is such, and to act accordingly. It is equally indifferent whether we view a given drug as the occasion, antecedent, or cause of returning health; the important thing is to know that it is followed by cure, even if we do not know how or why. The same considerations apply to all questions of practical science. Scientists have been so often led away from practical pursuits by vain inquiries into metaphysical causes, that one can fully sympathize with Comte's prohibition of noumenal research, and can also comprehend the enthusiasm with which the new philosophical evangel was heard and preached. But the positivists were not content with proclaiming the inaccessibility of metaphysical causes: they inconsistently proceeded to deny them, and thus became metaphysicians themselves. Now while we allow the highest place to positivism as a method of practical research, we must still insist that meta-

physically it is quite untenable. For in order that A+B shall be followed by C and not by X, A+B must determine C and exclude X. Without this assumption everything might be followed by anything or by nothing. Each phenomenon would be independent; it would be undetermined either by its antecedents or by its coexistences. All continuity of being would disappear, and a magical and groundless series of phenomena would alone remain. To-day would be independent of yesterday, and without effect on to-morrow. Positivism becomes possible as an ultimate theory only through the uncritical favor of common-sense, which, caring little for speculation, and understanding less, is always willing to shield a hard-pressed speculator from the consequences of his own opinions.

A similar judgment must be pronounced upon the theory of nihilistic sensationalism. This school, starting with the assumption that sensation is the sole source of knowledge, points out that sense can never reach causation, and then claims that there is no such thing. If we grant the premise, of course the conclusion follows; for it is perfectly plain that causation can never be observed. All we can see is a series of changes; the determining agency is a mental addition; and if the mind be allowed to contribute nothing to knowledge, we must reject the causal judgment with all that it implies. But after we have gone to this point, the reaction sets in; and empiricism devours itself by attempting to explain our belief in causation. If the doctrine were true, all accounting for anything, beliefs as well as external phenomena, should cease. But from Hume down, empiricists have busily cancelled their own system by applying the causal notion to justify its own destruction. Their explanation invariably consists in hypostasizing sensations and attributing to them attractions and repulsions among themselves; and these hypostasized sensations are affirmed by their interactions to determine and explain the belief in causation. Thus it is plain that empiricism undermines causation only by

causation itself. Unspeakable advantage cannot fail to result to philosophy from such unspeakable insight.

This inconsistency of empiricism is patent in all its theories of mind. It is one of the wonders of philosophy that no speculators have been such thorough determinists in mind as the empiricists, while their own theory expressly excludes all determination. They account for and explain everything in the mind by its circumstances, and are willing to leave nothing unexplained. When it comes to freedom they are, as a rule, the most pronounced determinists. The law of causation is constantly invoked to crush out the belief, and the law itself is exaggerated into pure fatalism. It is one of the mysteries of speculation that a school which in the physical realm denies all necessity, all universal truth, and all determination, should, when the question of freedom comes up, become the strictest necessitarians. Upon their principles freedom is antecedently no more improbable than necessity; uniformity is no more probable than non-uniformity. Which is true, or whether both may be true in different realms, is a question which the empiricist, of all men, should leave to experience; whereas he, of all men, is the first to settle the question by an apriori intuition. But empiricism is the chameleon of philosophy, and lives only on condition of being allowed to change its color to suit the emergency. Finally, we may say that, apart from any question of the reality of interaction, it is still an interesting speculative problem to determine its conditions when assumed as possible. The reality may safely be allowed to secure its own recognition. Inconsistent empiricism deserves no attention; and consistent empiricism, which denies all determination of any sort, may be left to itself.

The last view mentioned was the pre-established harmony of Leibnitz. In a previous paragraph it has been pointed out that interaction must reconcile individuality with community of being. Things which are to act upon one another cannot have the ground of their being entirely in themselves,

but only in the system as a whole. It will not avail to say that they have their being in themselves, and the ground of their activity in the system; for we have seen that being is implicated in activity. The being is the agent which acts in this or that definite way; and to be this agent, that is to be itself, it needs the co-operation of other things. Leibnitz's view is based upon the extremest assertion of individuality. Whereas the occasionalists found a difficulty only in conceiving the interaction of soul and body, Leibnitz denied the possibility of interaction between any two individuals, no matter how much alike in kind. The gulf of individuality cannot be crossed at all. For, he says, the monads have no windows through which they can receive or emit anything. Each one exists, therefore, in absolute self-sufficiency, receiving nothing and giving nothing, neither acting nor acted upon. Each monad has the ground of all its unfolding in itself; and it unfolds by its own inner law. Of course, the first question is, How can there be any system with such a lot of independent and mutually indifferent elements? Leibnitz replies, that all the monads were created, and the properties of each were determined with reference to those of all the rest; and the properties of all were determined with reference to the end of the system. The plan of the architect contains the ground of the form and position of every part of a building; so also the plan of the universe contains the reason why anything is, what and where and when it is. Each thing, then, logically determines every other in the thought or plan of the system; but in the real system there is no dynamic connection of any sort. Each thing exists by itself. But this logical determination of each for each and for the whole is not merely momentary, but reaches throughout the entire history of the monads. They agree perfectly at the beginning; and the rate of development is so determined that they agree perfectly forever. The state of each at any moment is just what the state of the whole demands. They keep absolute time. Leibnitz

calls this the pre-established harmony; and illustrates it by two clocks which are so adjusted that they run together, though mutually independent. Hence, interaction is only in appearance. That which seems such is, in fact, only the spontaneous unfolding of the monads. Again, the system, as such, exists only in thought. The reality is a multitude of independent things, each existing in a hard self-identity, and unaffected by all the world beside. There is properly no system. But we confine ourselves to the one point of interaction.

This view is commonly regarded as antiquated, and even obsolete; nevertheless, in principle, it underlies much of our speculation, especially our theories of perception. We have already pointed out that the physicist's theory of interaction reduces to this view, with the exception of the pre-establishment, as soon as we admit that transient forces are only abstractions. The atoms are viewed as sown in space, each shut off from all the rest by a void, across which nothing passes, and yet each incessantly adjusts itself to all the rest by virtue of an opaque harmony between them. So, all those theories which explain interaction as the result of a law or a world-order reduce to this view, as soon as they are made intelligible. In fact, every theory which makes finite individuality absolute, or which views the finite as having its ground of being in itself, is shut up to this view. In all such systems there can be only correspondence, not interaction. Nevertheless, Leibnitz's view, when taken absolutely, is beset with the gravest difficulties. Like occasionalism, it leads at once to the extremest idealism, or, rather, to solitary egoism; for, on this theory, the perceiving monad is determined entirely from within, and, hence, the cause of our perceptions is never anything external. Thus, the outer world appears as needless to account for our perceptions, and even for our sensations. It is, then, plainly gratuitous to affirm any outer world, or any persons other than ourselves. Leibnitz appears never to have seen that his extreme indi-

vidualism makes both God and the world superfluous. He obtained his problem only by trusting the common-sense of mankind, and he retained it only by reserving it from the logical consequences of his own theory. If we take his theory in earnest, it leads immediately to the extremest idealistic egoism, and cancels itself. One cannot be a Leibnitzian without trust in perception; and one cannot remain a Leibnitzian and trust in perception.

Leibnitz, however, never meant his view to be pushed to such an extreme. He even claimed to find in it a demonstration of God's existence. Moreover, he himself was far from faithful to his own theory when he came to treat of body, and especially of organisms. As the monads are the sole realities, we must view all combination as phenomenal, and as existing only for the perceiving mind. Hence, bodies and organisms do not properly exist; they are only modes of appearance; or, rather, they are thoughts generated by our own minds, without anything corresponding to them in the outer world. Still, the appearance of unity in such cases is so marked that Leibnitz did not venture to make it only phenomenal, but posited in organisms, and even in crystals, a governing monad, which is the unity of the whole; but, in so doing, he relaxes the integrity of his principle, and admits an interaction among the monads. But the great difficulty of the system is its fatalism, and the consequent overthrow of knowledge. To maintain the harmony, everything must be fixed. To be sure, it is hard to see how such a system could fall into disharmony in any case. As each monad is self-centred, and contains the ground of its unfolding entirely in itself, collision between the monads would be strictly impossible. If discord appeared at all, it would be only to the divine mind, which would see the monads departing from the demands of the system. But it is plain that the theory, such as it is, is purely deterministic. Possibly some believer in freedom may think to exclude this element by bringing in the divine foreknowledge, which

should adapt the universe to human thought and volition. But when we remember the conflicting thoughts and volitions, this would lead to contradiction and impossibility. Leibnitz himself held determinism to be a necessary factor of the system, and excluded all proper freedom. It is a striking illustration of the blinding influence of speculation, that one who had moral and religious interests so much at heart as Leibnitz should have failed to see the bearings of his theory on both.

From a speculative standpoint, it is stranger still that he should have failed to see the bearings of his view on the problem of knowledge. In such a system, we should expect the most exact and consistent knowledge. Since each monad is expressly harmonized with all the rest, and has the duty of mirroring the entire universe, one would look for absolute and harmonious knowledge. But we have no such knowledge. Error is a fact. For every sound opinion, the monads have produced a myriad unsound and grotesque ones. Our theories and views of reality are not harmonious with one another, and are rarely self-consistent. What are we to make of this fact on this theory? Objective error is a misconception of reality, and this, by hypothesis, is excluded. Nor can we trace it to a careless use of our faculties, for all self-determination is excluded. If we were free persons, with faculties which we might carelessly use or wilfully misuse, the fact might be explained; but the pre-established harmony excludes this supposition. And since our faculties lead us into error, when shall we trust them? Which of the many opinions they have produced is really true? By hypothesis, they all ought to be true, but, as they contradict one another, all cannot be true. How, then, distinguish between the true and the false? By taking a vote? That cannot be, for, as determined, we have not the power to take a vote. Shall we reach the truth by reasoning? This we might do, if reasoning were a self-poised, self-verifying process; but this

it cannot be in a deterministic system. Reasoning implies the power to control one's thoughts, to resist the processes of association, to suspend judgment until the transparent order of reason has been reached. It implies freedom, therefore. In a mind which is controlled by its states, instead of controlling them, there is no reasoning, but only a succession of one state upon another. There is no deduction from grounds, but only production by causes. No belief has any logical advantage over any other, for logic is no longer possible. And this is the case in Leibnitz's system. There is a succession of mental states with which we cannot interfere. We are determined to one belief as absolutely as to another. Truth and error are alike necessary, and there is no standard for distinguishing between them, and no power to use such a standard, if we had it. Thus knowledge is overturned, and science and philosophy are made impossible. No theory can be allowed which leads to such results. Philosophy must not commit suicide, unless forced to it. We reject, therefore, the theory of pre-established harmony, as Leibnitz held it, as incompatible with both science and philosophy. Finally, it fails to exclude the problem with which we are dealing, for it is forced to assume, at least, an interaction between the finite and the infinite. At best, it only removes it from one to the other. Leibnitz was greatly influenced by the deistic speculation of his time; still, he would never have dreamed of making the finite independent of the infinite.

But while the doctrine of a pre-established harmony, as Leibnitz held it, must be rejected, certain features of the doctrine must be retained in every theory of interaction. We have seen that the action of a thing is never something imparted to it from without, but is always and only a manifestation of the thing's own nature. All that the action of other things does is to supply the conditions of this manifestation, or to determine which of many possible manifestations shall take place. But, if there is to be any law and

order in such a system, so that definite antecedents shall always have the same definite consequents, there must be an exact adjustment or correspondence of each of the interacting members to all the rest. Otherwise, anything might be followed by everything, or by nothing. The whole system of law upon which science builds is but the expression of this metaphysical adjustment or correspondence. How this correspondence is to be secured is the problem which concerns us; but, at all events, it must be affirmed as a postulate of all objective science. Every scientific conception of interaction assumes that similar causes must have similar effects, and that there is some fixed quantitative relation between the action and the effect. Under given conditions, there can be only one result. To any given action, every other element must correspond with a given reaction. But if this is to be the case, then everything must be adjusted to every other in an absolute and all-embracing harmony. We object, then, to Leibnitz, not that he teaches a pre-established harmony, but that he conceives it as he does. By making the elements mutually independent, he falls into the difficulties mentioned. When this error is avoided, and the doctrine is understood to mean only universal adjustment and correspondence, then it is a necessity of every system.

All attempts to escape the notion of interaction fail. The question recurs, How is interaction between two or more things, conceived as independent, possible? The explanations given thus far are failures. The interaction must be declared impossible so long as the things are viewed as independent. By definition, the independent must contain the ground of all its determinations in itself, and, by analysis, that which is subject to the necessity of interaction must have the grounds of its determinations in others as well as in itself. The two conceptions will not combine. Every attempt to bridge the chasm between independent

things by some passage of forces, influences, etc., results in a purely verbal explanation, which it is impossible to think through. Neither coexistence nor contiguity in space throws any light upon interaction; and, since interaction must be affirmed, the only way out is to deny the independence of the plurality, and reduce it to a constant dependence, in some way, upon one all-embracing being, which is the unity of the many, and in whose unity an interacting plurality first becomes possible. An interacting many cannot exist without a co-ordinating one. The interaction of our thoughts, and other mental states, is possible only through the unity of the mental subject which brings all its states together in the unity of one consciousness. So the interactions of the universe are possible only through the unity of a basal reality, which brings them together in its one immanent omnipresence. And this we affirm, not at all because of the mystery of interaction between independent things, but because of its contradiction. The simple analysis of the notions of interaction and independence shows them to be incompatible. Whichever we retain, the other must be given up. And, as the notion of interaction is essential to the notion of a system, we give up the independence of the interacting members.

But, if we deny their independence, what need is there for going outside of them for something else on which they depend? Why not make them mutually dependent, so that the series of things, A, B, C, etc., shall not depend on Alpha, but on one another? In this way, each member of the system would exist only in connection with the other members, but the system itself might be independent. The several things would constitute an arch, or, rather, a self-supporting circle, and thus A, B, C, etc., would be the only realities, although they would mutually condition and imply one another. This objection is a very old one. It was current in Aristotle's time, and is considered at length by him. One manifest objection is, that it seeks to make an independent

out of a sum of dependents. A, B, C, etc., are severally dependent, but A+B+C+etc., is independent. But if A, B, C, etc., are distinct ontological units, this is absurd. There is nothing in the sign of addition which is able to transform a dependent thing into an independent. There must be some bond underlying that sign, and that bond is interaction. When two mathematical quantities are found to vary together, one must be made a function of the other, or both must be made a function of a third quantity, common to each. When a series of things vary together, it is equally impossible to regard them as absolute units. Some one thing must be independent, and all the rest must be, in some sense, functions of that one. As interacting, a state of each must imply a certain state of all; and this is impossible, so long as there is not some being common to all. We conclude, then, that the whole can never be reached by summing the parts, but that the parts must be viewed as phases of the whole. This view may be illustrated by the rhetorician's conception of the doctrine of force or energy. According to this, there is one force, but various in mode and manifestation. These various modes, however, are nothing independent and individual, but are only phases of the one energy which underlies them and exists in them. The one force is not to be understood by summing up the various conditioned manifestations, but these are to be understood as outcomes of the one force. The self-centred fact—the true existence—is the one force, and not its passing phases. This misconception of a physical doctrine illustrates our view. The impossibility of producing an independent being by summing up dependent parts forces us to deny that A, B, C, etc., are the only realities, and that the independent reality is but their sum. The community of being which their interaction posits compels us to deny that they are ultimate ontological units. If, then, we are not content to place behind A, B, C, etc., a being distinct from them, which co-ordinates and controls them, we must, at all events,

posit in A, B, C, etc., a being common to all, which constitutes their reality, and of which they are but special modes or manifestations. And thus we come back to the view of the previous paragraph. Interaction is possible in a manifold only as the members of the manifold are dependent upon some unitary being, which either co-ordinates and mediates their interactions, or of which they are but phases or modifications.

Two conceptions, then, of this dependence, are possible. We may regard the members as ontologically distinct, and as brought into interaction only through the mediation of the basal one, which posits and co-ordinates them. In this view, the members of the system have the same relation as the pieces on a chess-board. In themselves they can do nothing, but must be moved by the player. Their interaction is only apparent, and is, in fact, the direct action of the one in adjusting them to the demands of the system. This view reduces to a universal occasionalism, so far as the interaction of the finite is concerned. The one is incessantly adjusting the relations of the many. Most writers on theism, who have transcended deism, hold this view in essence, although they would hesitate to accept the name of occasionalists. A simple inspection, however, shows that it is only the Cartesian occasionalism made universal. But, as pointed out in speaking of the latter theory, this view cancels all material reality, and reduces it to a form of energizing on the part of the basal one; for, as long as matter is conceived as matter, and not as spirit, it has no subjective activity, but all its action is objective and external. But if this objective activity be the act of something not matter, then matter has no longer any reason for existence, for that which it is posited to perform is done by something else. The theistic writers in question commonly speak of the objective activity as really the activity of the thing, but as "mediated" by the infinite; but this mediated activity turns out to be the activity of the infinite, and not of the thing.

The phrase is useful only in concealing the fact. Thus this universal occasionalism leads at once to the conclusion that all finite reality, as distinct from the fundamental reality, is of a spiritual nature, for impersonal dependent being does not fill out the notion of existence. Owing to the superstition of the lump, the theistic writers in question would be slow to admit this conclusion. They would still insist that there may be being which does nothing but be. But, for us, this is an "overcome standpoint."

The other possible conception of the relation of the one to the many is, that finite being has no existence or individuality in itself, but is only a mode or phenomenon of some one being which alone truly is. In our thought, these modes assume the appearance of individual things in interaction; but, in fact, there is nothing but the one true being and its modes. In the nature of this being, these modes are mutually determinative, because they are all modes of the one, and because the same being is present in all, as their ground and reality. The decision between these two views can be reached only as we find in the realm of the finite some being endowed with the wonderful power of selfhood, whereby it is enabled to become an individual, and to know itself as such. Thus we come back to the claim of the last chapter, that there is no certain test of finite individuality except personality. Apart from this, all finite being must be viewed as simply a mode of the basal one, and without any proper existence. As dependent, all its external activities are really activities of the one; and, as impersonal, it is without subjectivity. There is nothing left but to regard it as a form of energizing on the part of the one. We have abundantly insisted, elsewhere, on the fact that there is no such thing as being which simply exists, but that a thing acquires a title to existence only as, by its activity, it is able to assert itself as a determining factor in reality.

We began this chapter with the common notion of a plurality of independent things. These seemed to us then to be

capable of independent existence. But this view changed, under criticism, until, at last, we were forced to abandon it. No pluralistic theory of ultimate being is tenable, but pluralism must be displaced by monism. Of course, we do not fancy that this view settles all difficulties. On the contrary, it leaves the mystery of being and action as dark and impenetrable as ever. The only claim is, that this view is a necessity of clear thought. The analysis of the notion of interaction leads directly to it, and, without admitting it, the notion vanishes into contradiction. If the interaction of independent things were simply mysterious, there would be no reason for rejecting it; but, since it involves contradiction, we must declare that all interaction between the many is really an immanent action in the one. How this action takes place, whether with free intelligence or with blind necessity, we do not decide at present. It is enough to have shown that the ultimate pluralism of spontaneous thought must be exchanged for a basal monism. And the unity thus reached is not the unity of a logical universal, nor of any ideal classification of any kind, but the essential substantial unity of a being which alone is self-existent, and in which all things have their being.

Possibly it may occur to us that the same argument which we have used is equally valid to disprove any interaction of the finite and the infinite. We have all along assumed the possibility of an interaction between the two; and yet the infinite is certainly individual, and the finite is certainly distinct from the infinite. Here, then, we seem to need a new bond to connect these new members, and so on in infinite series. The reply is simple. Our argument has been based on the assumed independence of both members of the interaction, and applies only to that assumption. When two things are mutually independent, interaction can take place only through a mediating third, which embraces them both. But the independent may freely posit the dependent, and may also posit a continuous interaction between

itself and the dependent; but such interaction is throughout a self-determination, and is not forced upon it from without.

This point seems too obscure for any influence; and yet confusion here is at the bottom of the philosophy of the unconditioned. In particular, Mansel sought to show that God could not be thought of as cause, because as cause it must be related to its effect. He cannot, then, be creator, because as such there must be a relation between God and the world. But this objection overlooks the fact that relation in the abstract does not imply dependence. The criticism would be just if the relation were necessary and had an external origin. But as the relation is properly posited and maintained by himself, there is nothing in it incompatible with his independence and absoluteness.

How can individuality and community of being be reconciled; or how can individuals unite to form a system? This is the question with which we started out. The answer is, that they are irreconcilable; or that they cannot form a system, so long as the individuality is regarded as absolute or independent. Our next question was, How is transcendent action possible? The answer is, that it is possible only through the immanent action of one fundamental being. This being, as fundamental, we call the infinite, the absolute, and the independent. In calling it the infinite, we do not mean that it excludes the coexistence of the finite, but only that it is the self-sufficient source of the finite. In calling it the absolute, we do not exclude it from all relation, but deny only external restriction and determination. Everything else has its cause and reason in this being. Whatever is true, or rational, or real in the universe, must be traced to this being as its source and determining origin. But this point we reserve for future discussion.

CHAPTER V.

THE FINITE AND THE INFINITE.

In the previous chapter we have reached the conclusion that all things depend in some way upon one basal being which alone is self-existent. But this conclusion raises many questions and not a few difficulties. In particular, the relation of the finite to the infinite demands further consideration. Thus far we have determined it only as a relation of dependence, without seeking further to specify the nature or form of this dependence. To reach a more definite thought of this relation is one aim of this chapter. Again, the conclusion that all plurality is founded and grounded in a basal unity contains some highly important speculative consequences, which need to be unfolded. The nature of the absolute being we reserve for future discussion, and seek to determine its significance for the system by virtue of its position as basal and infinite. We may think of this being as an intelligent agent determining its course according to plan and purpose; and we may think of it as a blind substance, unfolding by an inner necessity. In the former case, the system would be a free act of the infinite; in the latter, it would be a necessary consequence of the nature of the infinite. The former view would be theism; the latter would be pantheism. In the next chapter we shall seek to decide between the two conceptions. But, in either case, the infinite must be viewed as the sole and determining ground of the system of things. It is the source of all law, of all manifestation, and of all movement

in the system. The consequences of this principle can be discussed without in any way taking sides on the theistic question. We have, then, two problems for discussion: (1) the relation of the finite to the infinite, and (2) the relation of the infinite to the finite. And here, as usual, we start from the common assumption that finite things are real. If we modify this view, it will be only as criticism compels it.

The discussions of the first chapter have freed us from the superstition of passive substance or pure being. We there found that the notion of substance is entirely exhausted in the notion of cause, and that agents only can lay any claim to existence. The infinite, then, is not to be viewed as a passive substance, but as a unitary and indivisible agent. Indeed, the misleading connotations of the notion of substance are such that we shall do better to drop it altogether, and replace it by cause, or agent. We are compelled to do this by critical reflection; and the advantages are great. The notion of substance carries with it many implications of the imagination; and these are perennial sources of error. It is largely conceived as a plastic something, or as a kind of stuff which can be fashioned into many things. These implications, rude and crude as they are, have modified disastrously most pantheistic speculation. The infinite has been viewed almost as a kind of raw material out of which the finite is made, and hence is at least partly exhausted in the finite. Sometimes the representation is less coarse; and the infinite appears as a kind of background of the finite, something as space appears as the infinite background and possibility of all finite figures in it. The infinite is further said to produce, or emit, the finite from itself; or by a process of self-diremption, to pass from its own unity into the plurality of finite things. It is the pure being which appears in all things as the reality of their existence.

The finite, on the other hand, is spoken of as parts or modifications of the infinite, or as emanations from the in-

finite, or as partaking of the infinite substance. Many pantheistic speculators have spoken of God as making the world out of himself. Others, again, have found the world in God prior to creation; and creation they view as the escape of these hidden potentialities into realization. Both alike have applied the notion of quantity to the problem, and have greatly exercised themselves with the inquiry whether God before creation be not equal to God plus the world after creation. This entire class of views rests mainly upon a false and uncritical notion of substance which identifies it with pure being or stuff; and they appear at once in their crudity and untenability when the stuff-idea is exploded. There is no stuff in being. The infinite substance means the infinite agent, one and indivisible. To explain the universe we need not a substance but an agent, not substantiality but causality. The latter notion expresses the meaning of the former, and is, besides, free from sense-implications.

This necessity of viewing all true existence as causal and unitary cancels at once a host of doctrines which have swarmed in pantheistic speculation. When we speak of the infinite as substance, the misleading analogies of sense-experience at once present it as admitting of division, aggregation, etc.; but when we think of it as an agent, these fancies disappear of themselves. As an agent, it is a unit, and not a sum or an aggregate. It is, then, without parts; and the notions of divisibility and aggregation do not apply. Hence we cannot view the finite as a part of the infinite, or as an emanation from the infinite, or as partaking of the infinite substance; for all these expressions imply the divisibility of the infinite, and also its stuffy nature. No more can the finite be viewed as produced by any self-diremption of the infinite; for this too would be incompatible with its necessary unity. All of these views really deny the infinite and replace it by an aggregate. The one divides itself into the many, and thereafter is only the sum of the many. But thereby the one disappears, and the many

alone exist. The difficulty is double. First, the notion of division has no application to true being, but only to aggregates; and second, if it had application, the result of dividing the infinite would be to cancel it, and replace it by the sum of the finite. But this would be to return to the impossible pluralism of uncritical speculation. The attempt to divide and retain the unity at the same time, is as if one should speak of the mathematical unit as producing number by self-diremption, and as remaining a unit after division. The necessary unity of the infinite forbids all attempts to identify it with the finite, either totally or partially. If the finite be anything real, it must be viewed as substantially distinct from the infinite, not as produced from it, but as created by it. Only creation can reconcile the reality of the finite with the unity of the infinite. For the finite, if real, is an agent; and as such cannot be made out of anything, but is posited by the infinite. How this can be, we do not pretend to know; but any other view is wrecked by its own contradictions.

Similar objections lie against all views which speak of the finite as a mode of the infinite. We have ourselves used this expression; and it is all the more necessary to define its meaning. In its ordinary use, it is based on the notion of passive substance, or pure being. Being is said to be one in essence, but various in mode; as the same raw material may be built into many forms. Accordingly all finite things are called modes, or modifications of the infinite. But it is hard to interpret this language so as to escape the absurdity of pure being and remain in harmony with the necessary unity of the infinite. The notion generally joined with such language is, that each thing is a particular and separate part of the infinite; just as each wave of the sea is not a phase or mode of the entire sea, but only of that part comprised in the wave itself. But in speaking of the unity of being, it was pointed out that this unity is compatible with a plurality of attributes only as each attri-

bute is an attribute of the entire thing. Any conception of diverse states which are states of only a part of the being would destroy its unity. The entire being must be present in each state; and this cannot be so long as the notion of quantity is applied to the problem. Hence in speaking of finite things as modes of the infinite, we must not figure the relation as that of the sea to its waves, or as that of material to the form impressed upon it. If, then, finite things are modes of the infinite, each thing must be a mode of the entire infinite; and the infinite must be present in its unity and completeness in every finite thing, just as the entire soul is present in all its acts. Any other view of the modes would cancel the unity of the infinite, and leave the modes as things in interaction. The infinite, then, cannot be viewed as a sum of modes, nor as partly in one mode and partly in another; but it must be present alike in each and every mode. Neither can the modes be viewed as forms or moulds into which the infinite substance is poured. Even this gross conception has not been without influence in the history of speculation; but it needs no criticism. In general, the phrase, modes of being, is misleading. It is allied with the imagination; and the mind always seeks to picture it. Just as we tend to conceive substance as a kind of raw material out of which things are made, so we tend to think of a mode as a mould into which the raw material is cast. Of course, the attempt to picture instead of to think results in absurdity. The view that being is cause cancels these misconceptions. Indeed, no other view can meet the demands made on the modes. The only way in which a being can be conceived as entire in every mode is by dropping all quantitative conceptions, and viewing the being as an agent, and the modes as forms of its activity. Hence the doctrine that things are modes of the infinite can only mean that things are but constant forms of activity on the part of the infinite; and that their thinghood is purely phenomenal. Of course, it is impossible to tell how the

one can act in various ways so as to produce the appearance of a world of different and interacting things; but this is only the impossibility of telling how there can be unity in variety, and, conversely, how there can be variety in unity.

We reach, then, the following conclusion: The infinite is not a passive substance, but the basal cause of the universe. As such, it is one and indivisible, and is forever equal to itself. Of the finite, two conceptions are logically possible. We may view it merely as a form of energizing on the part of the infinite, so that it has a purely phenomenal existence; or we may view it as a substantial creation by the infinite. But in no case is it possible to identify the infinite with the finite, either totally or partially. The decision between these two views, as before pointed out, can be reached only by studying the nature of the finite. If any finite thing can be formed which is capable of acting from itself, it has in that fact the only possible test of reality as distinguished from phenomenality. But this possibility can be found only in conscious agents. Only in selfhood do we find any proper activity and individuality in the finite. It avails nothing against this conclusion to say that the infinite may posit impersonal agents as well as personal ones; for the notion of an impersonal finite agent vanishes upon analysis. As impersonal, it would have no subjective activity; and as dependent, it has no objective activity. Thus the notion vanishes into zero. We must say, then, that only selfhood suffices to mark off the finite from the infinite; and that only the finite spirit attains to substantial otherness to the infinite. Apart from this, there is nothing but the infinite and its manifold activities. The impersonal finite attains only to such otherness as an act or thought has to its subject. Finally, the spirit must be viewed as created. It is not made, for making implies pre-existent stuff. But creation means to posit something in existence which before was not, and to do it so that the creator is no less after the act than

before. This is all that creation means; and to this we are forced by the contradiction of any other view.

Such is the relation of the finite to the infinite; it remains to consider the relation of the infinite to the finite. By virtue of its position, the infinite must be viewed as the source of all outgo and manifestation. Since the finite has no ground of being in itself, its nature and relations must be determined by the infinite; and hence the finite can be properly understood or comprehended only from the side of the infinite. The finite may be viewed as the outcome or expression of a plan or purpose on the part of the infinite; and it may be viewed as a consequence of the infinite. In the former case, the basal purpose will contain the ground or reason for all the determinations of the system; and a knowledge of the system will depend upon a knowledge of the purpose for whose expression and realization the system exists. No member of the system will have any ontological or other rights, except such as its position and significance in the system secure for it. Every finite thing is what it is, and where it is, and when it is, solely and only because of the requirements of the fundamental plan. If we view the infinite as unintelligent, we must view the finite as an expression of the nature of the infinite. In this case, the finite is just as dependent as in the former; and the nature of the infinite becomes the determining principle of all existence. The system and its members will be in every respect what this nature may demand; and a knowledge of what can be or cannot be will depend upon a knowledge of this nature. The meaning or significance of the infinite at any particular moment will be the sole conditioning ground of all things and events in the system. If movement takes place, it will be because the nature of the infinite calls for it. If it take place in one direction rather than another, it will be because the nature of the infinite would not be satisfied by motion in any other direction. Of course, it is impossi-

ble to get any exhaustive formula for this conditioning nature; but the conclusion follows not from any insight into the nature, but solely from the formal position of the infinite in the system. All speculators alike must pass behind the finite and find the conditioning principle of the finite in the infinite. If, for example, we allow the physical elements to be as real as the physicist assumes, we have still to allow that their number and nature and the order of their appearance are not determined by any ontological necessity in the elements themselves, but only by the demands which the infinite makes upon them. If the system exist for the realization of a plan, the elements will be in all respects what the plan of the system demands. If there be no plan, and the infinite be only a blind energizing, still this energizing will be such as the nature of the infinite demands for its realization. From this point, also, the elements will be produced in just such number, order, and kind as the significance of the infinite demands. Apart from a knowledge of this nature, we cannot know anything about the system. We cannot say that the present order has always existed; no more can we deny it. We cannot say that the members of the system were all produced at once, nor that they were successively originated. No more can we know anything about the future. Whether the members of the system will always continue, or whether they will instantaneously or successively disappear, are questions which lie beyond all knowledge. We do not know what direction the future will take in any respect whatever. The facts in all of these cases depend upon the plan or nature of the infinite; and unless we can get an insight into this plan and nature, our knowledge of both past and future must be purely hypothetical. No natural law, in and of itself, can give any hint of the time and circumstances of its origin. If the arch of being were sprung at a word, the laws of the system would still have a virtual focus in the past, just as the rays of light from a convex mirror seem to meet behind the mirror, but

do not. Or if any new order should arise at any point of cosmic history, this new order would also have a virtual focus in an imaginary history. Of course, "demonstrations" abound concerning what has been and what will be; but the fact which they really demonstrate is quite other than the demonstrators think. If we assume the uniformity of nature, we may indeed reach a certain insight; but the result is purely hypothetical. This uniformity is contingent; and, so far as we know, a complete reversal of all observed methods may occur at any moment. The reason is, that the determining principle of the course of nature lies beyond all observation in the hidden plan or nature of the infinite. Every system which denies the independence of the finite must allow these conclusions. The system will be at all times and in all respects what this plan or nature demands. The finite will come and go, change and become, in accordance with the same rule. The result is that an apriori knowledge of the system must be declared impossible; for such a knowledge demands an insight which no finite being possesses. In addition, even deductions from experience are only hypothetically valid.

Objections to these conclusions will come from opposite sides. The crude speculator of popular science will probably take umbrage at the suggestion that the physical elements are no necessarily fixed quantities. Having heard frequently of the indestructibility of matter, the two ideas have stuck together in what he is pleased to call his mind; and now he professes himself unable to separate them. But this mental impotence need not delay us. The indestructibility of matter, in the only sense in which it is proved, is compatible with the complete phenomenality of matter. And how long it shall remain true, even in this sense, depends entirely upon the infinite. A weightier objection comes from the side of the intellectualist, who urges that our view is a relapse into vulgar empiricism. If this objection were well founded, it would be a serious one; and as it is, it

makes it necessary more clearly to define our meaning. In the first place, intellectualism, if universally valid, is purely formal. Suppose we allow that all phenomena must appear in space and be subject to the laws of space; there is nothing in this fact to determine which of many possible phenomena shall appear in space. The most diverse phenomena are compatible with the laws of space; and hence these laws do not determine what phenomena shall be realized. This must be determined by something beyond space; and to know the outcome we must know more than the formal laws of space. Again, allow that the law of causation is universal, there is nothing in this formal law to decide what shall be caused. Here, again, we must go outside of the law to find the reason for any specific event. The same is true for all other intellectual first principles. They are purely formal and determine no specific content. The system of logical categories merely outlines a knowledge of possibility and does not give any insight into the specific nature of reality. A multitude of real systems would be compatible with these categories; and hence these categories do not explain why one of these possible systems should be real rather than another. The specific nature of reality must always be learned from experience. To one who could fully grasp the nature of the infinite, or the purpose which underlies the system, it would be possible to deduce it as Hegel sought to do; but it is doubtful if any one could be found nowadays who would claim such insight. If, then, we were justified in viewing first principles as universally valid, we should still have only a formal knowledge, and not a knowledge of reality. We should still be far from knowing what the reality is which exists within these formal limits. And for us there is no way of reaching this knowledge but by experience.

Again, those first principles themselves must be founded in the nature of the infinite. Just as what is real is founded in the infinite, so also what is true is founded in it. In our

finite experience we find ourselves working under a system of laws and principles which condition us, and which all our acts must obey. And these laws are not of our making, but rule us even against our will. Under this experience there grows up the notion of a realm of impalpable and invisible laws, to which all reality is subject. We think of them as ruling over being, and not as founded in being. And thus first principles particularly are conceived as a kind of bottomless necessity, which depend on nothing for their validity, and which would exist if all reality were away. But the untenability of this view is palpable. Laws of every sort, thought-laws among the rest, are never anything but expressions of the nature of being. Reality, by being what it is and not something else, founds all activity and all law. If a realm of law, apart from being, were anything but a mere abstraction, it could not rule being except as it came into interaction with being. To rule rightly, the law must be affected by the changing states of being, otherwise it might command one thing as well as another. Nor would the command itself be enough; it must enforce the command by its action upon its subjects. But this would make the law a thing. It would act and be acted upon; and this is precisely the definition of a thing. It is, then, a mere delusion when we fancy that there can be anything deeper than being, or anything outside of being. If outside of being, being must remain indifferent to it, unless this outsider be able to act upon and influence being. But this brings it at once under the definition of being. Hence, all laws, principles, phenomena, and all finite reality must be viewed as consequences or manifestations of the basal reality. First truths also, even as formal truths can be viewed only as expressions or consequences of this reality, and never as its antecedent, or as independent. It may be possible for us to perceive truths which shall be universally valid in the system, true alike for the finite and the infinite; but it is quite absurd to ask what would be true apart from the sys-

tem. When we ask such a question, we are always present with our thought-laws, derived from the real system; and our imaginary system is always constructed on the basis of the present system, and this we mistake for an insight into the nature of systems quite distinct from ours. But the answer to such questions always consists in telling what is now true for us as determined by the actual system of reality. The infinite is, and being what it is, the system of law and truth is what it is; and the thought of other and unrelated systems is a pure abstraction from our imaginary constructions. The question whether the system may not change its character, so that what is now true in mind may hereafter become false, will be answered differently according to the philosophical standpoint. The empiricist who would derive all truth from sense-experience cannot deny the possibility. The intellectualist, on the other hand, who claims in his intellectual intuitions to have an insight into the essential nature of reality, will deny the possibility. He will hold that there are certain principles which are necessary and universal, and which, therefore, will always be valid. It may be further objected that our view that the laws of thought are only expressions of the nature of being, implies that if being were different, truth would be different; and that this is only Mill's doctrine that two and two may make five in another world. The reply is, that Mill founded truth on the individual experience, whereas we found it on the nature of the basal reality. The claim that if this were different, truth would be different, amounts only to saying that if everything were otherwise, nothing would be as it is. It is equally true and barren.

Some speculators have affected to find a limitation of the infinite in the claim that it is subject to law of any kind; but this is only an overstraining of the notion of independence or absoluteness which defeats itself. It is necessary to the thought of any agent that it have some definite way of working. Without this the thought vanishes and the agent

is nothing. This mode, or law, of action, however, is not imposed from without; but is simply an expression of what the being is. As such it is no limitation. The mind is not limited by the laws of thought; but realizes itself in and through those laws. Apart from them it is nothing; and they apart from it are also nothing. The laws are simply expressions of the essential nature of mind. In the same way the laws of the infinite, instead of limiting, but express what the infinite is. They are not antecedent to it, nor separate from it, nor distinct in it. The only reality is the being in a definite mode of activity; and from this fact we form the notion of law, nature, etc. But the fact is always the being in action.

The conclusion, then, is that there is one basal being in action as the source of the system and of all its laws, principles, and realities. And this monism extends not only to things, but to principles also. It has been very common in English speculation to assume any number of principles, alike independent of one another and of reality. Space and time, especially, have been posited in mutual independence, and also as independent of all reality, finite and infinite alike. A common way of putting it is, that space and time would continue to exist if God and the world were both away. A few years ago an English philosopher of note proposed to increase this number of independent principles by adding matter as an "original datum objective to God." He proposed to regard space, time, and matter as original existences mutually independent, and existing as conditioning "data," with which God must get along as best he could. This return to the paleontological period of thought needs no additional criticism. The view violates the necessary unity of fundamental being. If space, time, and matter were independent of God, they could never come into interaction; and to bring them into interaction, some one would have to be made independent, or all would be degraded into dependence on something truly fundamental. Views like those

presented are the scandal of philosophy, and are possible only to the utmost superficiality. Whatever space and time may be, they cannot be independent and original existences; but all alike must be viewed as consequences in some way of fundamental being. This results necessarily from the unity of the basal reality, and from the fact that the nature of this reality must be the determining principle of all secondary existence and of all law and manifestation.

CHAPTER VI.

THE NATURE OF THE INFINITE.

In the previous chapter we have discussed the significance of the infinite for the system, whatever view we may take of its nature; but it is of both interest and importance, for our further study, to know whether this power be blind and necessitated, or intelligent and free. Our entire cosmological theory will vary greatly, according to our choice between these alternatives. We expect to show that an apriori cosmology is impossible, and that any system of necessity swamps reason in scepticism. And, since it is impossible to discuss many questions of cosmology without implicitly taking sides on this point, it is better to give it the prominence of a separate discussion. The complete determination of our conception of the infinite belongs to theistic philosophy; our inquiry confines itself to the two points of freedom and intelligence. We deal here with the question, because of its bearing on the general theory of knowledge; and we hope to show that the mind attains to neither insight nor rest until it presses behind necessity to an absolute personality or a free intelligence. Owing to its cosmological bearing, this chapter may be considered a transition from ontology to cosmology.

We have referred, in the introduction, to the two orders of mental movement—the order of reason and the order of experience. In the first order, the connection is rational and necessary; in the second, it is opaque and contingent. The general aim of the mind is to transform the latter order

into the former, so that the opaque conjunctions of fact shall become transparent and necessary connections of reason. From this character of the mind has resulted a general unwillingness to rest content with the given. Either the given must be exhibited as having a fixed place in a rational system, or it must, at least, be deduced from something besides itself. The ideal would be, to show that everything is a rational necessity, or an implication of the eternal truths of reason; but, as few cherish the fair dream that human thought will ever reach this insight, the aim next becomes to show that everything is, at least, an implication of something else, and can be understood only in that something else. Accordingly, the mind is unwilling to pause in any analysis, and perpetually seeks to decompose even the simple. In psychology, the discontent with a plurality of faculties, and the resulting attempt to reduce all mental phenomena to forms of a common process, are prominent illustrations. In physics and chemistry we meet the same fact, in the persistent attempts to reduce all the forces to variations of a single and simple process, or to reduce the chemical classes to combinations of a common unit. Some speculators go even further, and seek to deduce the elements themselves from something more ultimate. Conversely, when the speculators set out to construct a system, they all feel compelled to start with the simple and undifferentiated, and from this to reach the complex and manifold. If everything cannot be deduced from reason, it must, at least, be deduced from something else. Such attempts are in no way instigated by the facts of observation, but, rather, by the speculative desire to see every fact exhibited as a rational necessity.

This general tendency of the mind to deduce its objects has resulted in various apriori cosmologies. In most of these, the attempt has been to pass, by some necessity of reason, from being to its cosmological manifestations. Being itself was not deduced, but accepted, and then the world

was shown to be a rational implication of being. But one system was not content with this, and sought to show that the world is an implication not so much of being as of reason, or that it is a necessary consequence of eternal truth. The most noticeable of these cosmologies are those of Spinoza, Schelling, Hegel, and the mechanical evolutionists. We notice them in their order.

The way in which Spinoza comes to his notion of one infinite substance is open to criticism, but we are here concerned only with the use made of it after he gets it. He attempts, by a logical analysis of the notion, to pass from being to its manifestation, so that we may see the entire system flowing from the notion of substance, as the entire system of mathematics flows from the basal definitions and intuitions. But the system breaks down on the very first differentiation which experience compels us to recognize, that of thought and extension. How comes the one to manifest itself under these opposite and incommensurable forms? When a given element exists under varying conditions, it is easy to see how there might be variety of manifestation; but when the element is all, as in this case, we cannot call this illustration to our aid. There is nothing outside of the absolute to condition its manifestation, and hence this duality must be explained from within. Spinoza sought to escape the difficulty by the familiar device of a double-faced substance, which, on the one side, is extension, and on the other side is thought; but the difficulty is untouched, for the point is to know how, in the undifferentiated absolute, there can be two faces. Spinoza never solved this problem. The two faces are not deduced, but affirmed. Instead of being rational necessities of being, they turn out to be only facts which might as well have been anything else. And it is plain that no reflection on the bare category of substance will ever carry us beyond this point. The notion of being in general determines no specific being of any sort. There is nothing in it to tell us what being must be.

Spinoza was equally unsuccessful with the problem of plurality which shattered the Eleatic doctrine. How, in the one and eternal, can the many and temporal arise? Spinoza calls finite things modes of the infinite; but why should the one have many modes, and why should they be as they are? Here, again, a declaration of the fact takes the place of its deduction. We do not learn why the one must have many, and so many, and such, modes, but only that it has them. The problem can be solved only by positing an implicit plurality in the one; so that its passage into explicit plurality is not a passage from simplicity and unity into complexity and plurality, but only a passage from a complexity and plurality which exist for reason into one which exists also for the senses. In any necessary system, it is impossible, by regressive reasoning from the complex and plural, to reach the undifferentiated and simple. For the general character of all mere reasoning is, that it makes and eliminates nothing, but merely transforms the data. At every step of such reasoning we are forced to make implicit in the antecedents all the antitheses which become explicit in the consequents. Even if we reach a single being, so long as we deny thought, and retain only the principle of necessity and the sufficient reason, we are forced to transport all the antitheses into this being, and posit an inner mechanism of metaphysical states as complex as the product. If the many flow necessarily from the one, it is because the one is implicitly many. Reasoning backwards, then, from the outcome, we find the one of Spinoza's philosophy to contain, implicitly, all the oppositions and antitheses of the actual system. From this standpoint we can understand how some of his critics could mistake him for a polytheist and atomist. Spinoza did, at times, seek to make the many an illusion of the finite, but the illusion was itself inexplicable.

Regressive logical reasoning will never carry us from the complex to the simple. Progressive logical reasoning, on

the other hand, will never carry us from the simple to the complex. There is neither motion nor direction in the simple. It contains no ground for advance or differentiation of any kind. It is the incarnated law of identity; and, in order to get more out of it, the simplicity must be given up, and an implicit complexity of the simple must be made the starting-point. In that case, the explicit complexity would not be truly deduced, but only allowed to pass from the implicit to the explicit.

Spinoza's failure to explain, apriori, the simplest differentiation of the absolute, would make it needless to examine any attempt to account for the specific features of the actual world, if he had made such an attempt. The impossibility of deducing the various forms of existence by simple reflection on the notion of substance was apparent even to Spinoza. But, whatever unclearness of thought he had at some points, he did understand his own principle of necessity. With this principle, it was easy to see that all the specific features of reality must flow from the basal substance, even if we do not see how. The teleological problem he dismissed at once. The question, Why is a thing so? implies a belief that it might have been otherwise. We never ask why two and two make four, or why a straight line is the shortest way between two points; and, if we were convinced that all events in nature occur from a similar necessity, the question why? would exist only in unclear minds. To see that all things are necessary is to dismiss teleology. In this respect, Spinoza saw more clearly than many modern anti-teleological speculators. They allow the question, and attempt to answer it without appealing to teleology. In this they are illogical, and they expose themselves to numberless difficulties, for their explanations rarely give even a ray of insight into the process. Their true position would be to say that, since all things are necessary, the question is ruled out, for the question implies that things might have been otherwise. This claim will prove very effective in driving

off the teleologist, unless he should have the presence of mind to ask for some proof that the system flows from necessity. In that case, it will not be so easy to dispose of him. Spinoza's cosmology consists not in any insight into the system of things, but, rather, in the assurance that it must be so, and in the use of this assurance to discourage all specific questions. Of course, no insight into the actual could be reached from simply dealing with the formal category of being. It is curious to notice how completely this system ignores the tendency for deduction from which it sprang. It results, not in any true explanation of the given, but in accepting it as beyond question.

Schelling's system ran through various stages, until the end was quite unlike the beginning. At the start, his system was only a modified Spinozism. In the place of two attributes, however, he preferred to speak of two poles of the absolute. The absolute itself is the identity of thought and being, just as the centre of the magnet is the point of indifference between the opposite magnetisms. But not everything is thus balanced. In the thought-world, the thought-pole is in the ascendant, while, in the outer world, the thing-pole rules. In this way the opposition of subject and object, or of thought and thing, was produced. But this view is exposed to the same objections as Spinoza's system, and, in addition, the double polarity of the absolute is incompatible with its unity. His attempt to explain it as a necessary differentiation of the absolute succeeds only as he smuggles in a set of implicit differences, which must become explicit. If the absolute were truly indifferent, it would remain so forever. His later attempts to develop the system by a necessary process in the absolute have the same result. They all posit implicit antitheses in the absolute, so that the absolute is not properly the unity which cancels all differences, but the darkness which conceals them. That this must be so is clear from what we have said of the impossibility, in a system of necessity, of reaching the

complex from the side of the simple, or the simple from the side of the complex.

We pass to Hegel's system. This theory is, throughout, one of development. Whereas Schelling has identified the ideal and the real only in the absolute, Hegel identified them everywhere. And, since thought and being are the same, it is confusing to have two terms for the same thing. We may say, then, that thought is all. The laws of thought are the essence of reality, and the development of thought is creation. We need not go abroad, but in our own minds may learn the deepest secret of the universe. But the deepest fact in thought is the idea, or the notion. Let us analyze this, and we shall find the laws of existence.

It is not our purpose to describe the details of Hegel's system. It is in itself essentially vague—so much so, that his disciples have never been able to agree concerning his teachings. Accordingly, we have Hegelians of the right, left, and centre, all of whom insist that they have the secret of the master. The right wing holds that Hegelianism is the highest type of Christian theism, and the left wing finds in it atheistic evolution. There is equally a dispute whether the development of the absolute, which he taught, is to be viewed as a real development of the absolute, or merely as the development by which we grasp and unfold the conception of being. When he said that thought is being, did he mean there can be thoughts without thinkers, or only that thought can express the content of being? Did he identify conception and reality, or did he only mean that the categories and laws of thought are also categories and laws of being, so that what thought calls for being must realize, and what thought forbids is impossible in fact? However these questions are answered, the system itself has no motion in it. The thought of being pure and simple determines nothing specific. All that can be reached by analyzing the notion of being is a set of formal logical categories, and but few admit of a proper deduction from the

notion of being. Only those categories are deduced apriori which are necessary to prevent the idea from falling into nothingness. Activity and definiteness are thus necessary. Without affirming these, the idea falls into contradiction with itself. The remaining categories of quantity, number, space, time, matter, etc., are simply facts of experience. No amount of reflection on the notion of being shows that it must be manifold and plural, or that it must manifest itself in space, and under material forms. The pretended deductions of these categories are simply attempts to find some formal connection between facts which would never have been dreamed of if experience had not revealed them. Moreover, if the categories themselves did admit of a true deduction apriori, we should have only a formal outline of reality, and not its specific features. The fact that everything is active does not decide what the form of activity shall be. The fact that being must manifest itself in space and in material forms does not decide how it shall manifest itself in space, nor does it decide the specific nature of the material phenomena. We should thus have a deduction of the universe in general, without the least insight into anything in particular. We should have an outline into which all possible universes must fall, but of the real universe and its detailed features we should know nothing.

Nevertheless, Hegel has immortal merits. The problem of knowledge received, perhaps, its sharpest statement from him. The necessary rationality of the real he established once for all. The significance of reason for being he set in the clearest light. The categories of thought must be categories of being. Whatever is to be grasped by thought must be cast in the moulds of thought. To him the irrational was the impossible; and, since the content of being must be determined by thought, there can never be any reason for giving it other than a rational content. Moreover, it is possible to give his system a theistic signification which is full of meaning. The theist must allow that the system

of things is the expression of a purpose for whose realization it exists. He must further allow that, if we could grasp that conditioning purpose, we could see the whole system flowing from it by logical necessity. If purpose be supreme, then every feature of the system must be a demand of the basal idea, and must have a significance for the whole. It was, then, a great thought of Hegel's to seek to determine the significance of the various parts of the system for the whole, and such an aim was entirely consistent and intelligible. He failed on two accounts. (1.) We have not sufficient insight into the conditioning thought to enable us to grasp it and its implications. We may be very sure that such an idea would not be a simple and single thing like the notion, but, rather, a highly complex plan. (2.) The idea itself would not secure its own fulfilment. The laws of logic may demand much of reality, but, in themselves, they can never compel obedience. In order to pass from conception to reality, the plan must be set in reality, and we must pass from a simply logical connection to dynamic connection. This connection, though logical, is always something more, the additional element being the indefinable mystery which separates a thought from a thing. But the incarnated plan is simply mechanism, with the plan for its inner law. This point Hegel almost entirely overlooked. When he had shown that the logic of the idea or plan demanded something, he forgot entirely that, without a fulfilling agency of some sort, the demand of logic would remain a demand forever.

We have next to notice the scheme of the mechanical evolutionists. Once in a while some romantic disciple of this view proposes to evolve everything from something, which is not much of anything. He is not content to assume matter and its laws as given, but wishes to evolve them; and every definite fact, of whatever sort, he insists on viewing as a product. Mr. Herbert Spencer has, perhaps, gone further in this direction than any one. He

states the problem of philosophy to be, to construe the passage of the universe from the homogeneous to the heterogeneous. This passage he calls evolution, which he defines to be a passage from an indefinite incoherent homogeneity to a definite coherent heterogeneity, through continuous differentiations and integrations; and his entire system is written to illustrate and defend this formula. The nature of this homogeneous is nowhere very clearly stated. At times it seems to be diffused matter, and one definition of evolution reduces the process to a redistribution of matter and motion. But the view which his writings best support is, that this homogeneous is, simply, persistent and unknowable force. It ought to be beyond all antitheses and distinctions of every kind, for, in so far as it has oppositions of any sort in it, it is not homogeneous. But, when Mr. Spencer first allows us to see it, it already possesses the distinctions of matter and force, matter and ether, attraction and repulsion, and, indeed, of atomic individuality. How these primal differentiations were reached Mr. Spencer never tells us. At times he attempts to show that all the laws and collocations of matter result directly from the persistence of force, but the showing consists not in any insight into the facts, but only in the claim that nothing could have been otherwise without implying that some force which did act should not have acted, or that some new force, which did not act, should have acted. Sundry attempts are made to deduce vital, social, and political movements from the physical forces; and, whenever the objection is made that the deduction is pure assertion, the invariable answer is, that to question it is to question the persistence of force. The entire force of the argument consists in the same appeal to necessity which is familiar to the student of Spinoza. This appeal, however, makes even the attempt at explanation inconsistent; for, to ask why anything is as it is assumes that it might have been otherwise. From the side of being we get no hint of what is necessary, but, from the side of

the manifestation we learn what the necessity is, and then, by appealing to necessity, we ward off questions as to the process. No analysis of the notion of the homogeneous gives any insight into the present order, or even into the simplest mechanical laws. There is no visible reason why it should take on any of the forms of the real world; indeed, it does not account even for the simplest change.

Spencer attempts to provide for motion and progress by setting up a principle which he calls the instability of the homogeneous. This principle is demonstrably false. The homogeneous, logically and mechanically considered, is, properly, the only stable. It denotes that which is alike in every part. There can be no variations of force or motion in it, for that would introduce an element of heterogeneity into it. But a thing thus homogeneous would be in equilibrium, and would remain so forever, if not interfered with. The illustrations given of this principle all fail to illustrate, and consist of pretended homogeneities, acted upon by something outside of them. Of course, there is nothing outside of the all, and such illustrations do not apply. Instead of saying, then, that instability varies as the homogeneity, we must rather say that it varies as the heterogeneity. The bare notion of the homogeneous has neither motion nor progress in it, and leads to nothing. A very profound reflection upon the homogeneous sees in it no necessity for the physical elements, with their present classes, powers, combinations, etc. It is a purely formal notion, which can never advance beyond itself. On the other hand, when, from the heterogeneous, we reason by simple mechanical necessity, we never come to any homogeneous state, for, as we have said, reasoning never creates anything, but only makes explicit in the conclusion what was implicit in the premises. We merely pass, in such a regress, from a heterogeneity which exists for the senses to one which exists only for reason; but the farthest point reached contains, implicitly, all the heterogeneity of the present.

We said that Mr. Spencer should regard the homogeneous as lying beyond all antitheses of every kind. For the most part, however, he views it simply as diffused matter, endowed with all its present forces, and subject to its present laws, and moving through an ethereal medium. But this is not a homogeneity of any sort. In it are already the antitheses of matter and force, of matter and ether, of attraction and repulsion, and, above all, the antithesis of individuality, each atom being a separate and distinct thing. With this understanding of the homogeneous, Mr. Spencer's problem reduces to that of ordinary materialistic atheism—namely, given diffused matter and its laws to account for the forms and phenomena of the system.

A paragraph must be devoted to this phase of necessary evolution. It regards the forms and order of the system as a necessary outcome of the nature of matter. From the standpoint reached in the last two chapters, this view is utterly untenable, unless matter be defined in a way quite foreign to the common view. Matter, conceived as a manifold of discrete elements, is incapable of explaining anything, without the co-operation and co-ordination of a basal one. It may be worth while, however, to allow, for the sake of argument, the self-sufficiency of matter, and inquire into the possibility of constructing the system on a purely material and mechanical basis.

The great source of faith in such a possibility seems to be a certain misunderstanding of mechanical necessity. When the laws of motion are said to be necessary, and the laws of force are said to be fixed, the fancy is entertained that there is no longer any room for choice or purpose, for the fixed laws make only one result possible. We shall hereafter prove that the laws themselves bear no marks of necessity, but, at present, we allow them to be necessary, and point out that the necessary laws alone determine nothing, but only when combined with certain arbitrary data. To attain any specific effect in mechanics, the necessary laws must

work under peculiar conditions, which may be called the arbitrary constants of the system. Gravity is compatible with dead rest, with motion in a straight line, and with the greatest variety of orbital motions. The fact in each case is decided, not by gravity, but by the peculiar character of the arbitrary constants; in this case, by the peculiar disposition and velocity and masses of the attracting matter. The same is true for all the other general laws and forces of matter. As general, they contain no account of any specific fact, but are just as compatible with any other specific fact whatever. The explanation of the peculiar outcome must be sought entirely in the arbitrary constants. It is this fact which has led to the general conviction that a mechanical explanation of an effect can never be ultimate. This is expressed by the statement that the collocations of matter can never be explained by the laws of matter, and the collocations are the chief facts to be explained. And it must be confessed that the peculiarities of the system find no explanation in the fact that it is subject to invariable or necessary mechanical laws. The peculiar forms and direction of the system find their explanation only in the arbitrary constants of the system. Mechanical necessity, therefore, is always hypothetical; the effect is necessary only on the assumed truth of the data. But the data themselves will always have an arbitrary character. It is at this point that theism has always triumphed over mechanical atheism. It is willing to allow that effects may be realized in nature by a system of mechanical necessity, but insists that the arbitrary constants of the system were chosen with reference to the end to be realized. When, then, the atheist dwells upon the necessity of every event in nature, the theist points out that this alleged necessity has an arbitrary element in it which looks amazingly like choice. It is at this point that a reconciliation is possible between teleology and mechanism. Purpose may determine the arbitrary data, and mechanism may realize the purpose.

If, however, we are determined to allow no purpose in the system, then our theory must take another form. Mechanism, of itself, accounts for no specific law or collocation. The principles of mechanics and the fixed laws of force are as compatible with disorder and unmeaning combinations as with order and purpose. The laws of physics are as absolute in the Great Desert as in the flower-covered field. The difference is due, not to a difference of law, but of circumstances under which the law works. To give a mechanical account of everything, we must explain the circumstances also. But this is mechanically impossible. We can, indeed, explain the peculiar character of the consequent by referring it to its antecedent, but the antecedent must always be one which implicitly contains the peculiarity of the consequent, so that, in strictness, we do not explain the peculiarity, but remove it one step back. No matter how far back we go, the difficulty always precedes us. At the farthest point, our data contain implicitly all the conclusions which can ever be drawn from them, and they also exclude every other conclusion. Whatever was said of reasoning in general applies with especial force to mechanical reasoning. It creates nothing, but merely makes explicit the implications of the data. We have seen that arbitrary data have to be assumed, in order to give any specific value to mechanical forms, and those data contain all that is to come out of them. Conversely, when we reason backwards, from effects to antecedents, we have to attribute them, not to any and every antecedent, but to antecedents which contain all the mystery and peculiarity of the effects. Thus we never escape our arbitrary constants, and never explain them. They are in the data, as well as in the conclusion. We refer a to $-a$, and $-a$ is referred to $-2a$, and so on to $-na$. If $-na$ is given, then, in the course of time, a will appear; but, at the farthest point, $-na$, we have a implicitly and necessarily given. In such a scheme, we reach no resting-place, and no true explanation. A given fact, a, is,

because $-a$ was; and $-a$ was, because $-2a$ preceded it; and so on in endless regress. But, as all later orders and collocations were implicitly given in $-na$, to the exclusion of all others, it follows that the specific fact, a, is deduced from its antecedents, because it was implied in them. In any necessary scheme, any given fact is only a phase of the one all-embracing necessity; and, since this necessity is only a fact to be admitted, and not comprehended, every fact is of the same sort. The mechanical explanation of a fact turns out to consist in assuming a certain cause or causes of such a kind and in certain relations, that they must produce that fact, to the exclusion of every other. It explains the conclusion always by assuming it in the data. This, however, is not the scholastic principle, that all that is contained in the effect is contained in the cause. It only says that, to explain an effect mechanically, the antecedents must be of a specific kind, and that the effect would be lacking if the antecedents were different. A mechanical cosmology, therefore, is not possible on the basis, simply, of matter and mechanical laws, but only on the basis of matter so arranged, and with such peculiar properties and circumstances, that, if left to itself, it must infallibly realize the present system. But these arbitrary constants, which condition the product of the fixed laws, contain the very gist of the matter, and are left unexplained. The collocations of matter are not inherent necessities of matter in general, any more than the plan of a building is inherent in its material.

Pressed by these difficulties, some speculators take refuge in the notion that matter has certain mystic and subtle tendencies, whereby it tends to assume its peculiar forms. This is as if one should explain statues by saying that marble has a subtle tendency to take on the human form. But this is to leave all clearness of thought, and take refuge in the worst form of scholasticism. We can form some definite thought of motion and its laws, but a "mystic and subtle tendency" defies all comprehension. An explanation by

the mystic is purely verbal. Besides, it does not escape our objection, that mechanism does not explain order and purpose-like arrangement, for this new view does not explain the facts by matter as subject to the laws of force and motion, but by matter as subject to these laws plus certain mystic and subtle tendencies. But these tendencies, also, must be subject to fixed laws of some kind, so that, when we take into account all the constants of the system, we once more find our data necessarily including the conclusion, and excluding all plurality of possibility. In addition, we have abundantly seen that cosmology is not possible at all, on any pluralistic basis whatever.

We conclude, then, that the present order cannot be understood as the outcome of any logical or ontological necessities. It has all the marks of contingency, in that all its circumstances might conceivably have been otherwise. Hence we know that it is the product of necessity simply by assuming that it is so. No reflection on the formal categories of being, cause, dependence, etc., will give any insight into any of the specific features of the system. The order, then, must be assumed as an ultimate fact, of which no account can be given, or we must leave the plane of mere ontology and logical categories, and rise to the conception of intelligence and purpose. If we assume the order as an opaque fact, to be admitted rather than understood, we completely abandon the enthusiasm for explanation which ruled our earlier efforts. Instead of deducing everything, we confess that nothing whatever can be truly explained; and, having failed to explain cosmology on a certain basis, we abandon all attempts at explanation, and fall back into a fatalistic positivism, which, in turn, must pass into an all-devouring scepticism.

All of these systems of necessity find it very difficult to maintain the unity of the infinite. Spinoza's conception of the modes, and Schelling's doctrine of opposite polarities, are both incompatible with the unity of the substance. Ac-

cording to Spinoza, the attribute expresses the essence, and hence incommensurable attributes cannot belong to the same essence. And the problem is a difficult one, even when we view the infinite as cause; for, as omnipresent in the system, the infinite must act in everything, and it must act in each thing with exact reference to its activities in every other thing. If the activities were discrete and unrelated, there would be no system, but only a chaotic doing. But if the infinite be unintelligent, it knows nothing of itself, nor of its activities, nor of the harmony which is necessary among them. Hence the unity and guidance of intelligence must be replaced by a mechanism of inner states, which, by their interactions, determine all outcome. But this view would go far towards making the states things, and cancelling the unity of the infinite. The infinite would not be an agent, but a great series of states. Underneath the causation of the infinite, we should have to posit an order of causation in the infinite, and this would leave the infinite, conceived as an agent, second, and not first. Thus the idea of the infinite as absolute would disappear. The trouble is further aggravated by the fact that states can be properly predicated only of personal existence. In discussing change, we saw that in impersonal existence the being and the state fall together, so that there is no agent apart from the states. We also saw that impersonal being is simply a process whose several phases exhaust reality while they last. But, to explain the system, the infinite process must differentiate itself into infinite variety, and necessity contains no principle of differentiation. A necessary on-going which is complex and plural at one point is so at all points. Hence, to explain the differentiation, we must posit all the antitheses of the actual world in this process in opposition and interaction. Thus we fall back again into the notion of a series of interacting metaphysical states, which determine the outcome of the infinite.

Now this notion of interacting states in the one absolute

being must be declared untenable. That which makes it seem possible is the false reference of each state to a part of the being, so that they can enter into a kind of spatial interaction. Of course, we cannot regard the states as things, or as states of parts of the infinite, for that would cancel its unity at once. We can only mean that the plurality of states flows necessarily from the nature of the infinite, and that the succession of states is determined by the antecedent states. But in that case the principle of unity disappears, and we lose ourselves in the labyrinth of the infinite regress. We are, indeed, told that there is a unity, but the plurality is all we reach. Likewise, the infinite itself is made subject to time, and its present is referred to its past. Thus we chase the horizon. We reach no proper unity, but are lost among a plurality of states. We also reach no proper ground of any thing, owing to the impassable gulf of the infinite regress. Thus reason finds no rest in the assumption that the infinite is determined by its states. We must, then, assume that the infinite determines its states, and that it is always, and at every point, what it determines itself to be. There is nothing dynamically deeper than this self-determination. It is first, not second. It grounds everything, without being itself grounded. Thus we escape the endless regress of necessity. But, on the other hand, the abyss of arbitrariness yawns to engulf us. To escape this, we must assume that this self-determination is not in the dark of chance, but in the light of intelligence, and, hence, that the self-determiner is personal and intelligent. Only in this conception of the free person can thought be reconciled with itself, and a true explanation be reached. This is the only unity which can be manifold, and the only manifold which can be a unity. This, too, is the only escape from the impossible and disintegrating notion of interacting metaphysical states. Again, only in this notion of absolute personality can we attain to the proper independence and absoluteness of the infinite. As long as we remain on the

ontological plane, the infinite is subject to the law of time; indeed, it is in perpetual flow, and without any possession of itself. It attains to self-possession and self-identity only in its free selfhood. Finally, only in free thought do we attain to any true explanation. The one, by an act of freedom, posits the many, and the many have their ground and unity in the will and thought of the one. Thus we escape the need of viewing the infinite as a mass of implicit antitheses and contradictions, as all systems of necessity must do. No system which founds cosmology in anything but an act of free-will can retain the unity of the infinite. Of course, no one can comprehend the possibility of a free and absolute person, but no more can we comprehend the opposite possibility of an all-embracing and eternal necessity. It is enough to show that thought can rest only in the former. The objection that personality implies the limitation of the infinite disappears when we remember that the personality of the infinite means only that the infinite has knowledge of itself and its activities, and determines itself accordingly.

This ontological argument for the personality of the infinite consists in showing that no other conception is consistent with thought itself. We have further seen that if we seek a true explanation of the system, it can be found only in will and purpose. We have next to inquire whether there is any further warrant for viewing the system as founded in thought. Two questions arise. (1.) Is there any reason in the order of nature for affirming intelligence of the power not ourselves? (2.) What is the logical outcome of denying it? The two questions mutually imply each other.

The first question admits of a short discussion. From our standpoint we are freed from all pluralistic theories of the basal fact. The fundamental being is one. The law of causation and the necessary determination of all events in nature, which are recognized principles in all science, ex-

clude all appeals to chance or hazard. These make it impossible that any necessary system should introduce into itself any factor which was not in it from the beginning. New phenomena may, indeed, be introduced; but to reason, the phenomena are implicit in the system, and a mind which could grasp all the circumstances of the system at any moment would find both its history and its future completely given. The making clear of this conception is one of the great services of the mechanical theory of nature to theism. It has vacated all appeals to chance, and dispelled the notion that forms and collocations may be explained by any necessary agency in which they are not implicit. What, then, is the nature of the power which works in and through what we call nature?

The only means of knowing the nature of an agent is to observe what it does. The bare notion of agency is empty of specification, and no analysis will reveal any content beyond the general category. What is true of all agency is especially true of mind. A mistake which flows directly from our general bondage to the senses leads us to fancy that we see our neighbors' minds; and it has generally been argued against theism that we see mind in man, but none in nature. This claim it is one of the first effects of psychology to dispel. We know that our fellow-beings have minds only because they act as if they had; that is, because their action shows order and purpose. But no one will claim that the system of things shows less order and purpose than human action. If, then, we deny mind in nature, there is no reason for affirming mind in man. Indeed there is vastly more proof that the power which works in nature is intelligent than there is that men are intelligent.

We must go a step further. The last paragraph showed that the same argument which denies mind in nature throws equal doubt upon mind in man. We have next to show that if there be no controlling mind in nature, there can be no controlling mind in man. For if the basal power is nec-

essary, all that depends upon it is also necessary. In that case all unfolding is driven from behind, and nothing is led from before. Thoughts and feelings also come within this necessary unfolding. As such they are products, and not causes. They express simply the outcome and attendant of a certain phase of the universal mechanism. In that case any fancy of self-control which we may have must be dismissed as delusive. Our thoughts, etc., attend on the flow of reality, but affect nothing. If the forms and collocations of nature are the product of a mere automatic power, their human life and history also express no mind or purpose, but only the working of the same automaton. In earlier forms of the theistic argument, it was contended that the eye is designed because it shows the same marks of design which the watch does. The answer was that we know the watch to be designed, but we do not know the eye to be designed. But now we see that this answer is untenable. We do not know, but only infer, that the watch is designed; and if we allow that the eye is not designed, we must deny that design had any part in the production of the watch. If mind does not control in nature, it cannot control in man; and, conversely, if mind does control in man, it must also control in nature. If automatism be the foundation of the system, there can be nothing but automatism in the system.

The second question, What is the outcome of denying controlling mind in nature? is already partly answered. The direct result in clear thought is (1) to make all action automatic, and to reduce consciousness to a powerless attendant upon the mechanical processes of the system. (2) It allows one to believe even in such an attendant only in himself; for, as the actions of others are now known to be purely automatic, and not expressions of thought or purpose, there is not the least warrant for affirming any such idle attendants. But this position does such violence to intelligence that it cannot be held without breaking down all

trust in the mind and its products. An inevitable scepticism would at once result.

We reach the same conclusion from another standpoint. Any theory which shakes the mind's trust in itself is speculatively untenable; and for the reason that the theory can be established only by trusting our faculties, while the moment it is established it undermines itself. Now the theory which views the basal power as blind does make trust in the mind impossible in a variety of ways. From what we have previously said, it follows that in such a system our thoughts, etc., would represent no inner necessity of reason, but only the outcome of the mechanism. This is not determined by our thoughts, but determines them. But we see the mechanism determining different persons to the most different views; and at once the question arises, What in such a system is the test of truth? If we allow that truth must be consistent, and otherwise all reasoning is at an end, opposing views cannot both be true. It would follow that relative frequency and generality is the only test of truth. Thus we should be led to the ancient test of the consensus of the human mind as the final court of appeal. But in such a case we should have divers grounds for scepticism. Who would assure us that the blind power is not oftener mistaken than not? We should expect nothing better from blindness. Certainly, in most matters, the majority do not possess the truth. Moreover, we cannot allow the common consent of mankind as final without being led at once to theism, and retribution, and a future life; all of which notions are incompatible with our premises. But, on the other hand, we cannot deny the appeal to common consent without taking refuge in pure volition and self-conceit. In short, whether we allow it or deny it, we are equally involved in scepticism.

At first sight the last paragraph will seem to be inconclusive from confounding different things—namely, the general laws of thinking with detailed opinions. Common consent

is decisive for the former, but meaningless for the latter. Detailed opinions are not to be judged by their frequency, but by the mental character and opportunities of those who hold them. This distinction would be valid for a system which allowed the mind a power of ruling its thoughts according to an order of reason; but it is quite meaningless here. We must remember that in this system our thoughts are products of necessity, and our conclusions also are not drawn by ourselves; they are thrust into the mind by the necessary on-going of the great automaton. Indeed, the mind itself is nothing but a sum of thoughts and other mental states. As such, they represent simply what the state of the mechanism is at present. If the mechanism should vary, the thought and conclusion would vary. Whatever, then, the mechanism allows is logical; the illogical is that which it does not allow. The distinction between truth and error vanishes completely. There is no absolute truth, and there is no absolute error; but everything is truth or error according to the state of the mechanism. In fact, if the theory were true, reasoning, as a self-centred, self-verifying process, would be impossible altogether. But if, in spite of the theory, we retain any trust in reason, the first conclusion which reason draws from the theory is that reason is totally untrustworthy. We have before seen that the theory breaks down consciousness; now we see that it breaks down reason itself. At the beginning of modern philosophy Descartes raised the question, How is error possible? though from a different standpoint. We answer, (1) error is possible as a conception only as there is an absolute truth of reason and being; for error implies a departure from the truth; and (2) error is possible only through the fact of freedom, or through the peculiar relation of will to intelligence. If our faculties are not made for truth they cannot be trusted. But if they are so made, how can they go astray? If we have trustworthy faculties, which we may carelessly use or wilfully misuse, we can explain error without discrediting our

mental powers, but not otherwise. On any other supposition truth and error disappear as baseless ideal distinctions, and actuality is all. Either, then, we must allow that the basal power is intelligent, or we must confess that science and philosophy are impossible. But power, guided by inner intelligence, is what we mean by will. If there is to be any trust in thought and its products we must confess that the ultimate causality of nature is a causality of will. Whoever finds fault with this conclusion is earnestly requested to show how its denial is consistent with trust in consciousness and reason. And as philosophy can never be allowed to commit suicide, it is bound to take those views which are consistent with its own existence. Hence philosophy, when it understands its own conditions, must always be theistic.

From this standpoint we advance to consider the general relation of freedom to intelligence. It may still occur to us that the affirmation of intelligence is compatible with automatism; and hence it becomes necessary to point out that intelligence and the belief in freedom stand or fall together. It is one of the misfortunes of the doctrine of freedom that it has commonly been considered with reference to moral action only. In this field, interests, passions, and the various selfish sentiments are very prominent, and obscure the real nature of the question. Now by freedom is meant, not a power of acting without or apart from motives, but simply a power of choosing an end or law, and governing one's self accordingly. This power appears in its purest form in the passionless operations of the intellect. It has greater significance and sublimer illustration in the moral realm; but it nowhere appears so distinctly as in thought itself. In reflecting upon our purely intellectual life we see two processes going on, one of association, or of mental mechanism, and one of thinking. The former brings to us ideas in any and every order, just as they have been experienced, or as chance associations have been set up. In dream and reverie we have almost pure specimens of this activity. In think-

ing we have an activity of another kind. Here the mind interferes with the mechanical processes of association, and aims to reduce its chance order to the higher order of reason. The ideas are no longer suffered to come and go at random, but the fitting are detained and the unfitting are excluded, until the mind reaches a rational connection. In none of its activities is the mind so conscious of self-control as in this. It rules itself according to a preconceived end or law, and excludes all that does not harmonize with it. Of course this does not mean that the mind can coerce the conclusions of reason, but it does mean that in order to reach any sound conclusion it must be able to rule its activities with reference to the conclusion to be reached. In a mechanical doctrine of mind, on the other hand, the conclusion is coerced. It represents no inner necessity of reason, and no insight by the rational mind, but only the outcome of the mechanism. If we deny the substantiality of mind, then the conclusion is only the symbol of a certain state of the physical mechanism. If we allow mind to be real, but explain all its processes by association, then a conclusion represents the resultant of certain mental states. Nothing depends on reason, but only on the mental states; and these, for all we know, may become anything whatever, with the result of changing the conclusion to any other whatever. But this conclusion is the extreme of scepticism. Further, we know from experience that the law of reason, as the inner law of our thinking, does not of itself insure sound conclusions. The mind must adopt or accept the law, and rule itself accordingly. In particular, it must be on its guard against the influence of habit and association, which so often put on a misleading appearance of reason. And this it does only as it varies its standpoints, and reserves its conclusions until the inner connection of reason is reached. Without this power there can be no trust in reason whatever. Hence we say that freedom and intelligence stand or fall together.

Freedom and finality are necessary principles, if there is

to be any philosophy or science. Their necessity, however, is different from that of the laws of thought. Some have sought to put finality and causality on the same foundation of necessity, and have called them both intuitions. The necessity of freedom and purpose, however, is not given in direct intuition, or in simple inspection of our consciousness; it is a deduced necessity. They are necessary if there is to be any proper rationality; but it is not necessary that there should be rationality. They are then necessary to thought, but are not necessary in thought. We cannot think at all without the laws of thought, and we cannot save ourselves from scepticism without the other principles of freedom and finality.

It is a curious illustration of the advantage of discussing the question from the standpoint of thought, that most fatalists have allowed freedom in thinking. They have admitted the possibility of thinking twice, and of suspending both judgment and action. They have also at least tacitly allowed the distinction between thinking and the processes of association. The most striking illustration is given by the associationalists themselves. The fact that they have been able to turn back upon the principle of association, and resist and expose its misleading tendency, is a sufficient proof that thought is independent of association. Association does not explain disintegration. This arises only as thought turns upon itself, considered as a product of association; and by applying its own standard of judgment criticises and rejects the associational outcome. The existence of the associational theory, then, is a complete disproof of its claim to usurp the place of thought. A mind subject to association only would never criticise.

Our plan has not been to discuss the reality of freedom, but simply to indicate its relation to intelligence in general. A common notion is, that freedom is an anomalous something which can be allowed only in the face of reason and science. We think the opposite is plain. Without allow-

ing the reality of freedom there can be no trust in either reason or science. If the basal power be automatic, reason is overthrown; and if we are automatic, reason is also overthrown. In considering the possibility of rational knowledge, two points have to be considered, (1) the nature of the fundamental being, and (2) the nature of the finite knower. Our conclusion is, that we must view both as free and intelligent.

We said in our introduction that one of the great problems of philosophy is, How is knowledge possible? that is to determine the implications of the notion of knowledge, assumed to be possible. We have made a few determinations in the present chapter. In general, it is sufficient for the disproof of a theory that it overturns the native and universal trust of reason in itself, and makes knowledge impossible. Scepticism will never take permanent possession of the human mind. Contact with reality and the instincts of reason will effect a cure, if the mind have not lost the power of recovery. There are minds which, like a sick stomach, can keep nothing down; but such a state is pathologic, and has no argumentative significance. Certain forms of doubt, like parasites, flourish most on degeneration and weakness; or, like certain diseases, they spring from poverty of the blood. In all such cases the cure must be indirect, and can be found only in a general bracing up of the system. We are content, then, to pass by the sceptic, and leave our argument with such as believe that reason and knowledge are possible. Our claim is, that they are possible only on the basis of theism and freedom.

A word of caution must be uttered in closing. The value of this result is chiefly formal. It satisfies the mind in its demand for unity and explanation, and it saves us from scepticism. Its practical value is slight. We shall always have to resort to experience to learn both the purposes of the system and the method of their realization. Purpose itself is never causal, but is only the norm according to

which the agent which forms it directs itself. Hence a complete knowledge of the purposes of the cosmical movement would leave us in complete ignorance of the efficient causes which realize it. But it is of great importance to be able to hold that the basal causality of the universe is one of will and purpose, even when we cannot see its purposes nor the mode of their realization.

Part II.

COSMOLOGY

PART II.—COSMOLOGY.

CHAPTER I.

SPACE.

We have confined our attention thus far to the notion of being in itself; and the results reached are valid for any and all being. No notice has been taken of specific differences or of various forms of manifestation; but those points alone have been dwelt upon in which all real things must agree. We now leave these most general considerations and pass to the cosmological manifestation of being. The last chapter shows, however, that we have no purpose of deducing this manifestation as a necessary consequence of being. There is no apriori road whatever from ontology to cosmology. We must wait for experience to reveal not only the particular, but also the general, forms of cosmological manifestation. Our method, therefore, will be critical as usual. We start from the common-sense theory of a world of material things with the idea of seeing what rectification the previous discussion and further analysis may make necessary. But in the popular theory the world of things is located in space, and has a history in time. Space and time constitute a kind of pre-condition of the world; or a determining principle of all cosmological manifestation. The things which are in space and time might have been altogether different. Many widely diverse systems are possible

in thought; but, for all alike, space and time would have been conditioning principles. This is the position which space and time hold in spontaneous thought, and hence it is necessary to consider them. The present chapter deals with space, and the inquiry is, What is the metaphysical nature of space, and how is it related to the things which are said to be in it? We exclude, for the present, all inquiry into the psychological genesis of the idea as irrelevant to the present question. It was pointed out in the Introduction that the history of a notion never decides the meaning and validity of the notion after it appears; and that these points can be determined only by analyzing and reflecting upon the content of the idea as it is given in consciousness. Neither the geometrical nor the metaphysical properties of space can be discovered by either physiological or psychological theorizing.

In Part III. we expect to show that space, whatever else it may be, is a principle of intuition. As such, it is primarily a subjective principle rather than an objective fact. But we also expect to show that all perception is but an unfolding of the inner nature of the mind upon occasion of certain excitations. It is the reaction of the mind against external action. But as this fact does not warrant us in denying the object perceived, so neither does the necessary subjectivity of space, as a principle of intuition, warrant us in denying its objective reality as a fact. For, however real space might be, it must also be given in the mind as a mental principle, in order that the objective space should be known to exist. Since the time of Kant there has been almost universal oversight at this point. Kant himself is not as guilty as his followers. Although at times he inclines to deny the objectivity of space on the principle of parsimony, yet finally he rests his denial of independent space on the antinomies which the assumption involves. But his followers have generally thought it sufficient to point out that space must be a mental principle, and they have failed to

show that it cannot be anything else. The argument demands that space be shown to be a mental principle, and to be incapable of objective existence. For, as said, the fact that space is a subjective principle does not disprove that it may be objective, any more than the fact that our perceptions are all subjective acts disproves that they may also reproduce objective and independent facts. In both cases the settlement of the question must rest upon an analysis of the nature of the object. If reflection upon the content of the space-idea should reveal it to be incapable of objective existence, then, and only then, would its subjectivity be established. The one thing which the subjectivity of space, as a principle of intuition does accomplish, is to deprive the argument for its objectivity from the alleged necessity of the intuition of all its force. If space be such a principle, of course we cannot intuite things apart from it; but the necessity would lie in the nature of the mental subject, and would equally exist whatever the nature of the object. The nature of our sensibility determines us to perceive vibrating objects as colored, and we cannot perceive them otherwise; but the necessity is in ourselves. On this account the argument that things are colored because we must perceive them as such, loses all weight; and on the same account the argument that things are in space because we must intuite them spatially, loses all its weight. The result is, logically, a drawn battle between the two views, even if the doctrine of the objectivity of space were self-consistent. The idealist could show that there is no need to assume an objective space to explain our intuition; and the realist could show that the subjectivity of space does not exclude its objectivity, and that the latter view is far more in harmony with spontaneous thought. To overturn this balance of opinion and reach a conclusion, it is necessary to examine the content of the space-idea.

What, then, is space, considered as an object? Three views are possible. (1.) We may view it as something

quite *sui generis*, independent of all things, and of all that we understand by being. (2.) We may view it as a peculiar order of relations among things, but independent of any thinker; that is, we may think of it as a system of objective relations. (3.) We may view it as being only the form of objective intuition. The last view is double. We may regard this form as the outcome of a mental principle which is founded in the nature of mind; and we may regard it as the adventitious product of association working upon sense-experience. In the latter case, the space-idea corresponds to no objective fact, and is not the outcome of any mental law, but is only a subjective accident. This is the view of Mill, Bain, and Herbart. The latter, especially, has sought to show that any being capable of having presentations, must develop the space-intuition as a necessity of the psychological mechanism. The other view, which makes space an apriori mental principle, is essentially that of Kant. But as both views agree in affirming the subjectivity of space, we have no call at present to decide between them. Our present inquiry is concerned with the decision between the subjectivity and the objectivity of space.

At first sight the first of the three views mentioned is the true one. Space is not a thing, but the place of things, and as such is a necessary condition of their existence; for things must have place in order to exist. At the same time space is not a nothing, but a peculiar kind of existence, which can be described only in terms of itself. Something and nothing, in the ordinary sense of the terms, do not form a complete disjunction; for, besides these, a third conception, space, is also possible; and this cannot be defined in terms of the other two. This is the view of common-sense; and it seems forced upon us by the simplest experience. This view finds its expression in the oft-used phrase, that if all being were away, space would still remain with all its properties unchanged. Full or empty, space remains the same, changeless and eternal. For though space conditions being,

being does not condition space. When the intuitionist is looking around for a striking illustration of the impossible with which to confound the empiricist, he often lights upon the statement that God himself can neither make nor unmake space, or do other than submit to its necessity. The proposition frequently recurs in philosophy to regard space as a datum objective to all being, and with which being must get along as best it may. Space is not a system of relations, for relations are changing while space is changeless. It is not a property of things; for it is independent of things. It cannot be identified with any actual form, for it is rather the formless principle of all form. It is the mysterious background of forms and relations, and is identical with none. In this view, which is the view of common-sense, space appears as a fathomless and independent necessity, to which even the basal reality must submit.

At first sight, this view is sun-clear; but on closer inspection it is seen to be full of difficulty. To begin with, the conception of space as an all-containing form is an inconsistent metaphor borrowed from our sense-experience. Forms must always be forms of something; and when there is no reality to produce and limit the form, the form exists only in imagination. When one vessel contains another, it is not the form which contains, but the vessel; and if we cancel the reality of the latter there is no more containing. Space, then, as an all-containing form, is simply an inconsistent imagination. Nor would it help us to say that the form in this case is the form of space; for this would be to confess that space, simply as form, is nothing. Again, the asserted reality of space cannot be maintained without conflicting with the space-intuition itself. For space, as real, must come under the law of reality in general. Now in spontaneous thought, space is distinguished from things on the one hand, and from nothing on the other; and in this respect common-sense is much more rational than the philosophy which affirms that space is simply nothing; and

then distinguishes it from other nothings, supplies it with attributes, and affirms its existence. But if this distinction between space and nothing is to be maintained, space must be able in some way to assert itself as a determining factor in the system of things. No matter how nameless or ineffable a substratum we may assume for space, this demand cannot be escaped. It is vain to object that something and nothing do not form a complete disjunction, for there can never be any warrant for admitting into a thought-system realities which confessedly do nothing, and which therefore can be known only by revelation or by pure faith. To escape this absurdity, we must endow space with activity, and regard it as a peculiar kind of thing in interaction with other things. Without doing this, it is impossible to distinguish space from pure nothingness, and the affirmation of its existence becomes absurd. If space be real, it cannot be viewed as a powerless emptiness, but only as an active something. But this conclusion brings the space-intuition into contradiction with itself; for space is not a thing, but the place of things.

We reach this conclusion as the only way of distinguishing between space and nothingness; we reach it equally by considering the functions which are ascribed to space. In particular, space is said to condition things and their activities. But this language acquires a meaning only as space is viewed as possessing agency. For whatever thing conditions another must act upon it, and thus comes under the notion of thing itself. A curious attempt to escape this conclusion is sometimes made by calling space a negative condition of existence. If there were no place to put things, they could not be made. But this statement merely means that if a thing is to exist, its existence must not be prevented. The difficulty is in no way the lack of place, but the presence of positive resistance. If this were away, all things might coexist in a point. Again, it is said that space need not be regarded as dynamically, but only as logically, deter-

mining things. This is intelligible when space is viewed as a mental principle and no external reality, but not otherwise. In studying causation, we saw that logical determination is only a thought-movement, and must be replaced in reality by a dynamic determination. If now space, as an objective fact, is to exert any influence on things, it must act upon them, and must be acted upon by them. But this makes it a thing in the proper sense of the word, and destroys its character as space. If space is really to determine things, it must be as a thing and not as space, or it must be as a principle in being, and not as something standing over against it.

The conclusion that space, if real, is active, emerges from another standpoint. An extended body exists only as its parts exist. This is true, whether we regard the body as atomic or as continuous. If the body have an atomic constitution, the truth is self-evident; for then the body is but the aggregate of the parts, and exists in them just as number exists only in its component units. But if the body be viewed as continuous and not compounded, its existence in space allows us to divide the volume into different parts, each of which exists in its own space, and is distinct from all the other parts. Thus the body, though continuous, appears as the integral of its parts, and exists only as these parts exist. But it cannot exist as the sum of these parts without positing an interaction among the parts. That the part B shall maintain itself between and against A and C, it must be able to prescribe to A and C their positions relative to itself. The same is true for all other parts; and the conclusion is, that the extended body, though continuous, is yet a complex of interacting forces. This conclusion remains valid even if the body be indivisible; for such indivisibility would not rest upon a true unity of the thing, but only upon the greatness of the cohesion between the parts. The body would still be a system of interacting forces. Hence no body which exists extended in space can be a unit. It will

always be possible to distinguish separate points in the volume of the thing; and these can be held together and apart only as these points are made the centres of cohesive and repulsive forces. But in order that a thing shall be a true unit, it must allow no distinction of parts, and no activities which are activities of parts only. But this distinction of parts will always be possible so long as a thing is regarded as having real extension. Similar reasoning applies to space. If space be real and extended, its several parts must also be real, and space can have no proper unity. It must be an integral or a sum, and its parts must be its real constituents. We do not help ourselves by saying that space is infinite, and hence cannot be made up of finite parts; for if space be real, each smallest volume is a real part of space. Allowing space to be infinite, no finite volume will have any appreciable ratio to the whole of space; but there is a difference between a ratio and a part. Each cubic inch of extension is a true part of space; and space exists only as these parts exist. Nor is it of any use to say that space is continuous, and that our units of volume are only arbitrary divisions; for between any two points there is a certain amount of space which is distinct from the space between any other two points whatever. But the relation of these parts is fixed and changeless. Things may change their place, but every point in space remains in changeless relations to every other point in space. Spaces, like times, can be neither interchanged nor displaced. The point B will always be found between A and C, and all alike are immovable. But if space be real, this implies that the several points shall mutually determine one another's position; and if this is to take place in reality, it implies an interaction between the points. It is of no avail to say that space is a unit, and that points are only arbitrarily chosen positions in the unity of space; for (1) space as extended cannot be a unit, but only a whole; and (2) if extended space be real, then the system of points and parts is equally real. Each smallest

volume, therefore, must be fixed in position and content. It is absolute as to its own existence, but determined in its relations to other volumes. But if these relations are to be other than logical, and are to have other than a thought-existence, these volumes must be dynamically determinant of one another. The paradox of this claim is monstrous; but the assertion of a real space leads to it. The reality of space implies the reality of its parts; and the impossibility of interchanging these parts can rest only on a mutual determination. Of course, it is urged that this determination is logical; but logical determination exists only in thought. In objective reality, determination must be dynamic.

Thus it appears in various ways that the attempt to make space real, and yet distinct both from things and from nothing, is a failure. Either we must make it a pure nothing in reality, or we must make it a thing in interaction with itself and with other things. Both of these views are untenable, and the former is absurd. This view, when held, is commonly a play on words which makes nothing equal to no thing. To the question, What would remain if things were away? the answer is, Nothing. But the nothing in this case means only no thing; as appears from the fact that the speculator who gives this wise answer forthwith proceeds to give this nothing various geometrical properties, and to affirm its existence. He would be far from allowing the identity of the space-nothing with the thing-nothing, or with the mathematical nothing; and this proves that while he calls space nothing, he still has some indefinite positive existence in mind, which is distinct from nothing, and which has peculiar properties of its own. But if we view space as pure nothing, there is no ground for distinguishing it from any other nothing; for nothings must be indistinguishable. There is also no ground for attributing attributes to it, or for affirming its existence; the attribution and the affirmation would be alike absurd. But the other view, which makes space a thing in interaction with

itself and with other things, is as far from the common thought as is the doctrine of its ideality. Space determines nothing; but things, by their interaction, determine one another. Things are, indeed, in space; but the space which is occupied by things neither affects them nor is affected by them. Things and space coexist in mutual and absolute indifference. This is the common view as to the relation of space and things. Nothing could be further from this view than the doctrine that space has agency, and is hence a proper thing. But, finally, if we should allow such a strange notion we should at once conflict with our spontaneous convictions concerning space from another side. Space is the place of things, and things cannot be conceived without space. Hence, if we make space a thing, we need another space which is not a thing in which it may exist. When we think of space as a nameless and ineffable existence, we cannot think of its parts as implied in its extension without positing another space in which the former exists. But this view shuts us up to an infinite series, or an endless regress; because for each space, viewed as thing, we have to posit an empty space in which to hold it. We cannot, then, view space as pure nothing, and we cannot regard it as a reality. The former view is absurd, and the latter is inconsistent with itself.

A second difficulty with the doctrine which regards space as real, apart from things, is that it leads to a hopeless dualism of first principles. If space be a reality apart from things, it is something uncreated and eternal. No one would be hardy enough to maintain a proper creation of space conceived of as an infinite void, for no meaning can be attached to the phrase; indeed, the idea itself negatives creation. Those speculators who have taught a creation of space have generally abandoned the common conception, and regarded space as a system of relations, or as a property of things. In such a case, the creation of the things would be the creation of space. But the common notion of an in-

dependent space is repugnant to creation, for the necessity would ever pursue us of positing a previous space for the reception of the created one. Accordingly, spontaneous thought has always regarded space as one of the eternal and self-existent necessities which even God himself cannot escape. But this view is contradicted by the necessary unity of the basal reality. English and American thinkers, in general, have paid very little attention to the general problem of knowledge; and hence, as pointed out in a previous chapter, they have had little hesitation in allowing any number of independent principles. Many have proposed to view space and time as mutually independent, and as equally independent of God; and now and then a speculator proposes to add matter to the list. Indeed, the materialists generally view space, time, and matter as mutually independent and self-sufficient existences. But we have seen, in discussing the relation of the infinite to the system, that all principles and all manifestation alike must flow from the infinite, and that the infinite must be one. If we should posit anything aside from the infinite as alike independent, the second something could not manifest itself in our system without an interaction between the two. But this would make them both dependent, and would force us to assume some other being, deeper than both, as their common source or foundation. We cannot, then, view space and being as mutually independent; for in that case being and space must be in interaction, if space is to affect our system. But this would destroy the independence of both, and would also make space an active thing, and not space. It is conceivable that some person should still be found who might think it enough to say that the only relation between space and being is, that being is in space; but if they be mutually independent, existence in space can have no significance for being. Both being and space would go on in complete indifference, and there would be no possibility of communication between them. In that case no meaning

whatever could be attached to the proposition that being is in space. But it is absurd to speak of being as dependent on space, and hence we must view space as dependent on being. But it is impossible to view space, conceived as extended emptiness, as created or dependent. Hence space cannot be viewed as such emptiness, but must be in some sense a principle in being which is the root of spatial manifestation. Instead of saying, then, that being is in space, we must rather say that space is in being. It is strictly impossible to regard space as a self-existent reality, for the conclusions reached in the ontology make it impossible to posit more than one basal and independent existence. All else is a consequence of this one reality, either as a creation or as a principle of activity and manifestation. But space, as commonly conceived, admits of no creation. If, then, the popular thought has rightly grasped the content of the space-idea, we can view space only as some principle in being.

A final objection to the reality of space may be mentioned based on the unity of being. If space be a real objective existence, then the infinite, or rather God, is in space, and possesses bulk and diameter. For whatever exists in space must exist either as a point or as a volume; and as no one would think of ascribing a punctual existence to God, there is nothing to do but to ascribe volume. But we have seen in a previous paragraph that nothing possessing volume in space can be a unit. Points and component volumes can always be distinguished in the volume of such a thing, and thus the thing appears as made up of parts. But such a conception applied to the infinite cancels both its unity and its omnipresence. That which is omnipresent in space cannot be extended in space, for such extension would imply merely the presence of the being part for part, or volume for volume, in the occupied space. Philosophy cannot reconcile the necessary unity of the infinite with existence in space, and theology cannot reconcile its concep-

tion of the non-spatial mode of the divine existence with existence in space. But if space be real it must be infinite, and God must exist in space, and the indicated conclusions must follow. These conclusions apply especially to Newton's and Clarke's conception of space. They, in effect, made it an attribute of God; and Clarke framed a theistic argument on this conception. But this view simply affirms extension of God, and leads to the difficulties mentioned.

On all these accounts, therefore, we hold that space cannot be viewed as a real existence. Its reality is incompatible with the unity of being, and with the unity of all principles in one fundamental being. To maintain its reality, we must despatialize it, and make it an active thing; and thus we conflict with our space-intuition, which at once demands a second space to contain the first. Finally, we cannot bring space, and the things which are said to be in it, into any articulate relation without positing an interaction between them. Thus we fall back into the previous difficulty, and despatialize space. The declaration that space is real, and that things are in it, which seemed so sun-clear, turns out, upon inquiry, to be in the highest degree unclear and untenable.

These difficulties have led many thinkers to abandon the common notion of space for the second view mentioned—that space is a certain order of relations among realities. They allow that space apart from things is nothing, and hence that if things were away there would be strictly nothing remaining. But things, when they exist, exist in certain relations, and the sum, or system, of these relations constitutes space. Things, then, do not exist in space; but they exist in space-relations, and with space-properties. These relations and properties are the constituents of the space-idea, and by abstraction from them we come to the notion of a single unitary space. But while space is thus dependent upon things, these relations and properties of

things are quite independent of our thinking. This view, then, agrees with the preceding one in regarding these relations as independent of the mind, and as objectively existing among things.

This view has a variety of forms, and in all of them it fails to get clear of the previous view. When space is defined as the mutual externality of things, we have to call up the general form of space to understand what is meant. There is an externality which is not spatial, the externality of individuality. It is conceivable that different elements should be so related to one another as to coexist in the same point in space; indeed, it has often been proposed to conceive of chemical union as such interpenetration. In such a case there would be an otherness of individuality which would not be spatial. The mutual otherness of spirits also, though commonly represented as spatial, is properly only an otherness of personality, and space has no necessary part in the matter. If, now, we want to know what this mutual externality which constitutes space may be, we have to view it as the externality of different points in space. We can make nothing of it until we call in the general intuition of one extended space. Again, the spatial relations between things is not a relation of the things, but a relation of the spaces in which the things exist; and the things, by existing in those spaces, take part in the changeless relations which exist between them. Space-relations never change, but things change their space-relations. In this respect things are like the formless reality of Plato, which flows from form to form, while the forms and their relations are fixed and eternal. We cannot, then, identify space with any actual system of relations among things, for this would make space itself constantly changing. It would also exclude the myriad possible space-relations which are not realized. Space includes all actual relations, but it also includes much more. It is no particular figure, distance, or direction, for these are individual and changing; it is rather that underlying

principle of all figure, of all distance, and of all direction, which conditions all alike, but which cannot be identified with any or with all of them. Space itself is formless, but contains the principle of all form. Here, again, to understand what these terms and space-relations may mean, we have to fall back upon our general space-intuition; and if these relations be objectively real, space is objectively real also. Hence the view that space is only a system of objective relations among things does not meet the purpose of its invention, but implicitly assumes objective and independent space. It falls, therefore, with its support.

In the next place, this view is untenable, because relations as such are incapable of objective existence. If space be only a system of relations, it is necessarily subjective. The oversight here is pardonable. There are many relations among the objects of thought which are seen to be universal, and because they do not exist for one more than for another we say that they exist independently of the mind. Thought or unthought, the same relations exist among realities. But all we can properly mean is that these relations will always be affirmed whenever the objects are conceived or perceived. Common-sense attempts to secure a similar result for sense-qualities by declaring that they exist, whether perceived or not. But reflection shows this view to be absurd. We know now that nothing more can be said than that these sense-qualities will always be perceived whenever the proper organism appears. We may not say that things in themselves are colored, or hot, etc., but only that these qualities will always appear in consciousness under the proper conditions, which conditions, again, are not individual, but general. In perception in general we have the confidence that all perceptive beings will affirm the same relations between the objects of perception, and this confidence we express by saying that the relations themselves are independent of all thought. But this view we regard as totally untenable. Objectively there is nothing but things and their

unpicturable interactions. All that is more than this is contributed by the mind. When these things are conceived as a manifold, then the mind relates its objects as conceived. But the relating act and the instituted relation are purely subjective, and the relation has no existence except in the relating mind. It represents no ontological predicate of things, but the aspect of things in thought. It is with the relations of things as with those of number. Apart from mind, there is and can be no number. The simple and unrelated unit is the only thing which can exist in itself. The unit becomes number only through the unifying act of a conscious spirit; and as number exists as such only in consciousness, much more does it have its properties only in the relating mind. Relatable everything must be apart from our thought, but related it is only in thought. Oversight of this fact is at the bottom of many of the puzzles of the Greek sophists. Thus greater and less are predicates which belong to an object only when compared with another. To speak of the absolutely greater or less is quite absurd. They overlooked this fact, and hence were greatly puzzled by such problems as the following: If B is greater than A, and less than C, then B must be at the same time a greater and a less. Hence everything is a contradiction. But this most brilliant dialectic disappears when we remember that relations exist as such only in the relating mind. In itself, B is neither greater nor less than A or C; it is simply and solely B. At the same time, it may be such that when A, B, C are conceived together and compared, there will arise in all minds the judgment, B is greater than A, and less than C.

This necessary subjectivity of relations must be carefully distinguished from any doctrine which makes them individual or arbitrary. It allows the possibility that objects of thought may be so constituted that in clear thought only certain relations can be instituted, as in the case of number and geometrical figures. The relations, while subjective,

may be also necessary. It is equally possible that the objects of thought may be such that whenever they are conceived by any intelligence anywhere the same relations shall be instituted. The relations, while subjective, may be also universal. It follows only from this subjectivity that it is absurd to speak of relations as objectively existing. And what is thus true of relations in general must be true also of space-relations. In so far as space is a system of relations, in so far it has only a subjective existence. If space-relations are to have objective existence they must be more than relations; they must be a series of interactions among things. But in that case we should deny the indifference of things to space, and fall back again into the view which makes space active. We must then dismiss the doctrine that space is a series of objective relations among things. Space is neither a real thing nor an ontological predicate.

The two first views of the nature of space proving untenable, we seem shut up to the third, which makes space a form of intuition, and not a mode of existence. According to this view, things are not in space and space-relations, but appear to be. In themselves they are essentially non-spatial; but by their interactions with one another, and with the mind, they give rise to the appearance of a world of extended things in a common space. Space-predicates, then, belong to phenomena only, and not to things in themselves. But while shut up to this view by the failure of the others, we seem shut out from it by its own overwhelming absurdity. Certainly, before the doctrine can be made to seem anything but the most grievous outrage on common-sense, the paradox must be explained away, or at least relieved; and this we now hope to do. The chief difficulties are due to a swarm of misconceptions, which have clustered around the doctrine; and a large part of the argument for its validity must consist in removing these misunderstandings.

In the first place, the doctrine is commonly made to mean

that our space-intuition is something arbitrary, and without any determining factor in the world of reality. The mind is conceived as standing with its space-forms waiting to impose them upon reality without any regard whatever for the peculiar nature or circumstances of reality. These forms are purely external impositions, and might as well have been anything else whatever. They are the mental spectacles through which the mind looks, and, for all we know, other beings may have altogether different spectacles. This doctrine of the spectacles implies absolute nescience and universal relativity of knowledge; for, of course, we cannot tell how things would look if the spectacles were off; nor how things may look to other beings who may have different spectacles. But the obnoxious feature of the doctrine is, that the spectacles are viewed as having only an arbitrary relation to reality, and hence one which might as well be changed as not. Even Kant, the first pronounced teacher of the ideality of space, is chargeable with this misunderstanding and extravagance. Doubtless many passages could be adduced which would show that he viewed the order and sequence of phenomena as objectively determined; but in so doing he was inconsistent with his own doctrine of causation, which denies determination to things in themselves, and, besides, the conception of the mind, as arbitrarily related to things, incessantly reappears. The result is, that his theory of perception breaks down in the attempt to bring the mental form into use. The mental form is compatible with the most varied applications. The space-form in itself does not determine whether a given object shall appear as a cube, or as some other figure; and there is nothing in Kant's exposition which supplies a principle of discrimination, or makes the choice between the various forms other than arbitrary. The disciples of Kant were more oblivious of this difficulty than Kant himself, and in general they left the application of the mental form to pure chance. It was necessary, therefore, that the system should pass into the sub-

jective idealism of Fichte. Only recently M. Lachelier, in a treatise on the foundations of induction, has returned to this extravagance, and declared that the warrant for trust in induction is, that the mind gives law to its objects. This may do for the absolute, but the absolute needs no induction. The human mind, which alone needs to make an induction, has no such independence in the use either of the forms of the sensibility or of the understanding. The positions and relations of things in our subjective space are independent of our volition, and their spatial changes take place without any consent of ours. The source of their movement, and the ground of their relative arrangement, are not in us. The subjective image of things in space at any point and time is a fixed one. We cannot exchange the right for the left, the up for the down, the far for the near, etc. Least of all can we eliminate the idea of distance from our subjective space, and think of things as equidistant from one another. The same thing has happened with the subjectivity of space as with the subjectivity of sense-qualities. It is very common when the beginner in psychology has learned, rather than mastered, the latter doctrine, to hear him affirming that they are nothing but mental affections, in complete forgetfulness of the fact that, while subjective effects, they still have an objective cause, which, though not like them, nevertheless completely determines them. We can, then, affirm the subjectivity of space only in this form. The relation of things to us is such that when they strike upon our senses they produce certain sensations of light, heat, and sound. These sensations, however, are not copies of anything objective, but are the subjective symbol, or translation, of certain phases of the object. Now in the same way things and their unpicturable interactions are such that they produce in perceptive beings an intuition of space, which intuition, again, is not a copy of anything objective, but only the subjective symbol or translation into the forms of sense-intuition of unpicturable realities beyond them. The intui-

tion, however, is not independent of the realities, but for each change in the latter there is a definite change in the former. Just as a rise or fall in the rate of vibration is attended by a rise or fall of the tone heard, or the color seen, so any change in the metaphysical interactions of things is attended by a corresponding change in the apparent space-relations. Or as the dark ether tides flash into a sphere of light when they strike upon an eye, so the ineffable tides and activities of the infinite, when they strike the soul, appear as a world of things in space and space-relations. The subjective intuition has its objective ground; but that ground, though unlike its mental translation, yet stands in certain definite relations to it, so that a given state of the object allows only one space-translation, just as a given rate of vibration can be heard only as one tone. This fixed connection between reality and its spatial phenomena allows us to deal with the latter as if they were real objects, and to predict their course with as much certainty as if they were things in themselves. It produces the same reign of law among phenomena and the same possibility of prevision which would exist if phenomena were things. Mechanics and astronomy run no risk of being falsified or displaced by the subjectivity of space.

Are, then, all things together in space? No; they are neither together nor separate, for both of these predicates imply space, and we must not tacitly assume what we have openly denied. But just as the universe, apart from sense, is neither light nor dark, sounding nor silent, but such that it appears as light or dark, so things apart from intuition are neither apart nor together, neither in a point nor out of it; but such that they appear apart or together. The scholastic's conclusion from the non-spatiality of spirit that any number of angels could dance on a needle's point, rests on a tacit retention of the space-idea; for it denies space spatially.

A second misconception is, that our view makes space a

delusion, and thus destroys all confidence in the mind. This error has several roots. The first is the failure to discriminate between the relative authority of different forms of mental action. The second is a confounding of reality in mind with delusion. This mistake is also aided by the fact that appearance is often used to signify delusion. But in discussing being we pointed out that reality may have many meanings. We speak of events, relations, and thoughts as real; and upon occasion the enthusiastic moralist will declare that goodness is the only thing that is real. And certainly no one would regard love and goodness as unreal because they exist only in the free spirit. Of course they are not things, but they do not thereby become delusions. The objection we are considering rests upon an uncritical prejudice concerning the relation of the mind to the universe. It is viewed as non-essential, as adding nothing, and as at best only copying a reality which would exist just the same if all mind were away. This we say is an uncritical assumption, for it is one of the great questions of philosophy whether mind can be viewed as thus superfluous, or whether, on the contrary, the universe can have its full existence anywhere but in mind. To make this last question seem less absurd, we need only remember our conclusion that the universe, as a system of relations, cannot have an existence apart from mind. And the great empire of love and justice and righteousness, though real, can exist only in mind. The kingdom of thought, too, is, after all, a kingdom only in thought; but it is not on that account a delusion. As the subjective side, or manifestation of being, it may be necessary and universal. As we pointed out in the introduction, a subjective reality may be real for all, and it may be the very summit and crown of being. Now when we come to criticise the confused synthesis of experiences which makes up the world-view of common-sense, the question is not whether this mass of raw material be real, but what kind of reality can be attributed to it. And this inquiry is raised

not in a sceptical way, but with full faith in reason to disengage the several factors of the tangled mass, and assign to each its true position in an intellectual system. Pursuing the inquiry in this spirit, we soon find ourselves compelled to disturb the uncritical rest of common-sense. The entire world of sense-qualities is discovered to have no objective existence, but to be only affections of the subject. They do not thereby become unreal and delusive, for all that was ever true of them remains true of them still. Their nature and relations are totally undisturbed. We have learned not that they are unreal, but that they have their reality only in mind. But a childish haste at this point often hurries us into absurdity. After learning that their objective ground is a certain order of vibrations, we hasten to declare that they themselves are nothing but vibrations. As if the discovery of this objective ground made them other than they are. And we fancy that we have banished them from the system. But color and harmony, like justice and righteousness, still remain facts of the universe, though they have their existence only in mind. This illustration may serve to show the difference between reality in mind and mere delusion. And when we call space a mode of appearance we do not mean that it is a delusion, but the form in which being appears in intuition. Those appearances are delusions which intuition itself contradicts.

It is now generally admitted that the sensibility does not give us the objective fact, as we must think of it. That which exists for thoughtless common-sense as a colored object, exists for reflection as a collection of vibrating elements. That which exists for common-sense as a sphere of light, is for reflection a vast mathematical function of vibrations. But next the question arises whether sense-perception itself gives us the fact as it exists for reason; and we find grounds for thinking not. We view space as a mental principle, rather than an objective fact. But what we said of sense-qualities must be repeated here. Space does not become on

this account an unreal delusion. All that was true of space and space-relations, and of objects in space-relations, remains true still. We have merely discovered that there is something deeper than space, and that what appears does not reveal the fact as reason is forced to conceive it. And so we come finally to the conclusion that reality cannot be pictured, but must be thought; it must be grasped in concepts and not in images. For the pure reason, therefore, reality exists without space-predicates. In our intuition, it takes on the forms of space; in our sensibility, it takes on the form of sense-qualities. But none of these realms contradict one another; they rise rather in linear order, one above the other. Sensibility gives things as they affect us. Sensibility and perception combined give things as they appear. Only the pure reason gives things as they are. But this process is not sceptical. The conclusions reached are not forced upon us against reason, but by reason itself. Neither do we deny the truth of appearances as appearing. They furnish our starting-point, but not our stopping-point; for we find in the appearances themselves the necessity of going behind them to something which, though their ground, is still without the predicates of the appearances. But we should not pass behind the appearance if there were nothing in it to warrant it. In that case we should stop with the spontaneous view of the unphilosophical mind, and regard the world as it appears as the deepest and final fact. Whoever will bear in mind that the reality as it exists for reason does not contradict the reality as it appears, will see that there is nothing sceptical in our conclusion, provided it be solidly deduced. On the contrary, the refusal to go where thought points is the true and only scepticism. The charge of scepticism which is incessantly made against the doctrine rests upon misunderstanding. It is assumed that if the doctrine were true, we might intuite things in altogether different space-relations, and thus bring our intuition into contradiction with itself. But the intuition will never penetrate

behind itself. Thought alone can transcend the appearance and reach that which is behind it.

This demand to think of things without relation to space is, after all, not so foreign to our thought. We have only to reflect upon our own mental existence to see that in any case space applies only to objects as intuited. But in all our reasoning it never occurs to us to give our thoughts space-predicates. We think of our thoughts as neither in the soul nor out of it, but only as dependent upon it. We never think of them as to the right or left, or as above and below one another, but only as coexistent and sequent in logical relations. In the same way, we think of the fundamental being which we have been forced to posit as without form of any kind; and we think of things existing in it just as non-spatially as our thoughts and feelings exist in the mind. And as the soul and its thoughts cannot be pictured in their proper existence, so the infinite and its products cannot be pictured in their proper existence. In thinking of them, we must use concepts only, and not images. We point out again that if we do view space as real, the infinite itself must be viewed as in space with boundless bulk; but if, on the other hand, we cannot allow this conception, then we must also allow that the manifestations of the infinite, or things, are also not in space, but appear under the form of space. On this point, the popular thought has not attained to any consistent conception. Once in a while a speculator can be found who maintains that all things, finite and infinite, material and spiritual, are in space; but, in general, the tendency has been to limit space to material things only. But there has been no attempt to reconcile the non-spatiality of spiritual existence with the reality of space, as opposed to its phenomenality.

Another misconception is closely related to this. When we say that space, as appearing, is only a form of intuition, we are at once tempted to say that it is only a form of human intuition; and thus there arises the notion that possibly

there may be beings which intuite things apart from space, or which may reverse our intuitions. But this is no necessary consequence of the doctrine. The subjectivity of space decides nothing as to its universality, any more than the subjectivity of mental and moral principles decide as to their universality. There may be universals in mind as well as in the non-mental realm. Whether we have reached a universal in the case of space can be decided only by reflecting upon its character, and the cogency with which the notion forces itself upon intelligence. Space may well be a form of all intuition, both human and divine. At this point a curious inconsistency often masters us. The current notion of the infinite being, even when it is allowed to be intelligent, is that it is pure reason only without intuition or sensibility. This notion depends on the ancient doctrine that intuition and sensibility are degraded and imperfect forms of reason, and as such can find no place in the perfect. But we have seen that they are not properly competing, but simply different forms of mental action, each of which supplements without contradicting the rest. But if this be so, then we cannot deny these forms to the infinite without limiting it, so that what is possible with man should be impossible with God. We hold, therefore, that God is not only pure thought, but he is also absolute intuition and absolute sensibility. He not only grasps reality in his absolute thought, but he sees it in his absolute intuition, and enjoys it in his absolute sensibility. We cannot without contradiction allow that there is anything in the world of the thinkable which is excluded from the source of all thought and knowledge. Our notion of God as pure thought only would exclude the harmonies of light, sound, and form from his knowledge; and limit him to a knowledge of the skeleton of the universe instead of its living beauty. The notion of God as sensitive appears as anthropomorphic only because of mental confusion. To the thoughtless, sensibility implies a body; but in truth it is as purely spiritual an affection as the most

abstract thought. All the body does for us is to call forth sensibility; but it in no sense produces it, and it is entirely conceivable that it should exist in a purely spiritual being apart from any body. There can hardly be a more irrational conception of the divine knowledge than that which assumes that it grasps reality only as it exists for pure thought, and misses altogether the look and the life of things. On the contrary, just as we regard our reason as the faint type of the infinite reason, so we regard our intuitions of things as a faint type of the absolute intuition; and so also we regard the harmonies of sensibility and feeling as the faintest echoes of the absolute sensibility, stray notes wandering off from the source of feeling and life and beauty. In fact, this universality and fixedness of the space-intuition brings our view into close harmony with the common view. Space, though existing only in mind, yet does not depend on the finite mind alone, but has its essential source and seat in the mind and thought of the infinite.

Some final misconceptions may soon be warded off. It is not to be expected that daily language should be modified to suit this view; indeed, if it were, it would almost certainly be false; for daily life deals only with things in intuition, and space is a form of intuition. It is only when we pass into the realm of pure thought that we must drop our space-conceptions. It would be absurd pedantry to refuse to say that the sun rises and sets, and yet when it comes to an ultimate explanation, we must forsake the phenomenal standpoint and put our eye at the centre. It would be excessively tedious and stupid if, instead of calling a thing red or green, we should say that it emits vibrations of a certain length. When dealing with phenomena, phenomenal language only is in place. Yet even here it is at times necessary to drop our phenomenal expressions and deal with the fact in thought-terms. So also in metaphysics we use and must use the language of space in dealing with phenomena; but when we seek for an ultimate explanation, we are forced to

abandon this language as having only a phenomenal application.

Yet, after all, it will be urged, this view is totally foreign to the appearance. Of course it is, and no one denies it. Space as the form of appearance can never be emptied out of appearance. It is a complete misconception of our aim to suppose that we are trying to intuite things out of space. It will be further urged that this is not the impression which reality has made on the common mind. But what of that? The common mind is busied only with things as they appear, and space is real in appearance. Our theory excludes it only from things as thought, and not from things as they appear. Moreover, the doctrine is scarcely more scandalous to so-called common-sense than is the received doctrine of sense-qualities. It is amazingly clear that the sun shines, whether seen or not; and that sound rings just the same, whether heard or not. But physiology has discredited these notions utterly. Indeed it is high time to abandon the attempts to settle the deepest questions of philosophy by appeals to uncritical common-sense. Our senses are given to us for practical purposes. They reveal to us how things affect us and how they appear. As long as they do this well and truly, they furnish the conditions of a mental and emotional existence; and there is no apriori ground for asking for more. Nor is the pretence to be allowed, that the divine veracity is implicated in the truth of the senses. If it were so, that veracity would be hopelessly impugned, for the whole course of scientific research has shown that things are not what they seem. The atomic theory of matter, and the current theory of light and sound, are in fatal contradiction of appearances. But this claim is a worn-out fetch of certain disciples of common-sense, whereby they hope to put an end to all discussion, and to supplement their own lack of argument. It rests entirely upon the unproved assumption that the senses were meant to give us the metaphysical truth of things instead of appearances. And upon reflection it

becomes plain that the senses give us something better. We owe to them all the wonder and beauty and harmony of the world, so that they appear as the necessary adjuncts of reason in order to clothe the naked skeleton of being with life and meaning, and in order to interpret to reason itself what is contained in those mysterious foundations which it lays down. It would be a beggarly exchange if we were forced to give up the delights of sound and color for the contemplation of a vast sea of mechanical vibrations. There would be just ground of complaint only if reason itself were shattered, and if the moral instincts and aspirations of the soul were misleading will-o'-the-wisps.

Thus we have expounded, at great length, the doctrine in question, in the hope of rescuing it from the misunderstandings which make it so obnoxious to our spontaneous thought. A single pedagogical remark remains to be made. Any attempt to construe the doctrine to the imagination must necessarily fail; for space is the form of the imagination. All such attempts are excluded by the terms of the doctrine, and hence involve a misunderstanding of it. We cannot, therefore, pierce behind space by the imagination which is limited to the forms of space, and tell how the non-spatial realities look in their non-spatial existence. They do not *look* at all. Pure thought only can enter that unimaginable realm, and with its non-spatial categories determine how we shall think of those things which, by their interactions, found all relations and all appearances.

We have now to decide between the three views of space. In any case, space must be a principle of intuition. One fact, which makes the objectivity of space so unquestionable to unreflective thought, is, that we have apparently an immediate perception of its existence, so that our perception of space is as direct and immediate as our perception of things. On the other hand, it is made an objection to the subjective theory that it implies a deal of mental mechanism and mental activity, of which we are totally unconscious.

Both positions are worthless as arguments. The apparently immediate perception of space is, in any case, the result of non-spatial activities. The existence of space would not account for its perception. We must in some way be affected by it. But space itself does not act upon the mind; only things do that. Hence our knowledge of space is a mental interpretation of the action of things upon the mind. In this action, spatial properties are displaced by varying intensities of activity, and these variations are translated by the mind into space-terms. In Part III. we shall discuss this proposition at length; we refer to it here because of its position in our argument. Hence there is not the slightest need of admitting an objective space to account for our space-experience. Nor do we, by affirming an objective space, escape the necessity of admitting the mediating mental activity which is objected to. If space be a principle of intuition, its necessity in intuition is fully explained, and the impossibility of intuiting things apart from it becomes apparent. There is no need to admit any objective space to explain all the facts. But, in strict method, this fact ought to settle the question. The idealist rightly urges that objective existences must not be multiplied beyond necessity. The objective existence of space is as much a theory as is its subjective character; and when it is seen to be a theory, its validity must be established. That it is generally held is a fact, not a proof; just as the general belief in the motion of the sun around the earth was a fact only, and not a proof. We need not, however, rest our conclusion solely on the fact that the realist cannot prove the objectivity of space. We have further seen that the realistic view is inconsistent, and upon analysis even unintelligible. It hovers between making space something and nothing, and both views are absurd. It also conflicts with the unity of being, and forces us to regard the infinite as composed of parts. Finally, it implies a hopeless dualism of first principles, in that it implies the coexistence of two necessary and

mutually independent principles. But this view is strictly impossible, and any doctrine which leads to it must be rejected. The attempt to regard space as a system of relations between things we found to be an impossible compromise between the subjective and the objective view. It is impossible to interpret the objective relations without reference to our general intuition of one space, and finally it is impossible to view relations as objectively existing in any case. The objective existence of space, then, is not only not proven, but it is in itself unclear, inconsistent, and impossible. We reject it, therefore, for the view that space is ultimately a principle of intuition, and, secondarily, a mode of appearance. But though subjective, it is not arbitrary or individual. A given state of being may allow of only one space-translation, and this translation may be universal and changeless in all intuition, whether divine or human. However that may be, the universe can have its spatial properties and relations only in the mind, which not only belongs to the system, but is both its foundation and its crown.

These arguments for the subjectivity of space differ, it will be seen, very largely from those offered by Kant. The decisive reason, with him, is found in the antinomies of reason with regard to space. These antinomies concern the limitation or non-limitation of the universe, and the infinite divisibility of matter in space. Both the affirmative and the negative, Kant said, can be proved with equal cogency, and hence we must limit space to a purely subjective significance. But there is no logic to this conclusion, unless it be shown that the contradiction vanishes when space is assumed to be phenomenal, and this showing is not forthcoming. Indeed, the special difficulty in the spatial antinomies is in no way relieved by the assumption that space is only phenomenal. If the thesis and antithesis were alike cogently proved, which, fortunately, is not the case, the conclusion would be that the space-principle is in contradiction with itself, and the outcome would be, not phenomenalism,

but scepticism. And, in general, when a contradiction exists between the results of equally valid mental processes, there can be no relief in phenomenalism. One or the other of the conclusions must be fallaciously reached, or else scepticism of reason results. On this account, Kant's deduction of the subjectivity of space must be declared insufficient in logic and doubtful in principle. We have aimed, therefore, to give the argument another form, and have founded the conclusion, not on any inherent contradictions of the space-principle, but on the impossibility of uniting the objective reality of space with the necessary unity of being, and the impossibility of admitting more than one basal and necessary being. These facts, together with the necessary subjectivity of relations and the impossibility of bringing space, assumed or real, into any articulate relation to the things which are said to be in it, constitute for us the ground for denying the objective reality of space.

But are we ourselves any better off than before? Have we not introduced doubt and distrust into the mind to such an extent that scepticism is the only outcome? We think not. We have, indeed, thrown doubt upon uncritical thinking, but always in the name of reason itself. We have found various inconsistencies in our spontaneous conceptions, and these we have sought to eliminate by proposing the subjective conception of space. The practical value of this view is, indeed, small enough. It opens no new realm, and leads to no new insight. Its only value is in removing the contradictions under which the common view labors. It enables us to maintain the unity of being and the unity of the basal reality. It enables us to escape all the perplexities concerning the relations of things to space, which are insoluble so long as space is viewed as real. Besides, as a principle of intuition, it has all the authority and universality in intuition which space, as a reality, could possibly have.

The relation of the infinite to space calls for brief men-

tion. We have affirmed that space, as the principle of intuition, may exist for the infinite as well as for the finite, and this may easily be mistaken for a limitation of the infinite. But this would be to confound space as principle with space as limitation. Space as limitation can exist only for the finite; and this limitation consists solely in the fact that our immediate action upon reality is limited. Far and near are terms which depend entirely upon the amount of mediation or of time necessary to affect any given reality. Wherever we act immediately, there we are; so that, instead of saying we can act only where we are, we ought rather to say we are wherever we act. But, in order to act upon most things, we must employ media. Hence we are limited. But the infinite needs no media. It acts directly upon all reality, and hence is everywhere. For, by omnipresence, we can mean nothing more than this immediate action upon all reality. The conception of omnipresence as a boundless space-filling bulk is a contradiction, for that which is in space and fills space cannot be omnipresent in space, but different parts must be in different places. Each part, then, would be in its own place, and nowhere else. Thus the unity and omnipresence of the infinite would disappear.

Our general view of space cannot fail to suggest the much-debated question concerning the dimensions of space. Of late years the claim has often been made by mathematicians that space may not be restricted to three dimensions, and elaborate discussions have been made of the properties of non-Euclidian space. The most curious conclusions have been drawn as to what would be true in such spaces, and the impression has become very general that the conception of space as having only three dimensions is mistaken. We have now to inquire whether the principle of space is such as to restrict it necessarily to three dimensions. Our own theory of space as only a principle of intuition seems to

favor the new view; or, at least, it seems more credible that space should appear in n dimensions than that it should exist in n dimensions. If space exists as it appears, there seems to be an end of the matter, while the ideal view leaves the question open. We hope to show that the ideal view has no such implication.

The principle of space has no such universality as the laws of formal thought. These condition all our thinking, but the principle of space conditions only our intuition of objects. We must further allow that all forms of external experience are not alike calculated to awaken the mind to react with a spatialization of its objects. We must also admit that our nature may contain mysterious possibilities which are at present entirely hidden. It is, then, possible that, under certain forms of experience, the mind would never come to the space-intuition. It is equally possible that, under other forms of sense-experience, the mind should arrange its objects according to some altogether different principle, so as to have a new form of intuition. This new form, however, would not be space, but something quite peculiar. As such, it would be related to the space-intuition, as our sense of color is to that of sound. This, of course, is a mere logical possibility, but there is certainly no ground for saying that the space-intuition is the only one possible in the nature of being. If there were any ground for affirming the existence of such a new form, there would be nothing apriori incredible in it. It is entirely possible, however, to hold, along with this admission, that the space-intuition cannot be changed in its essential laws and nature.

In affirming that the dimensions of space are necessarily three, and only three, it is important to premise that the planes of reference are perpendicular each to the other two. Without this assumption, the dimensions of space may be as many as we please. But, with this assumption, the claim is that the position of any point in space can be defined by straight lines drawn to each of these planes of reference.

These straight lines are called the co-ordinates of the point, and they tell us how far the point is from each of the planes. The three planes represent the dimensions of space. Thus far nothing has appeared in the affirmative which is not purely hypothetical, or which does not confound the dimensions of things in space with the dimensions of space itself. The first class of arguments consists entirely of illustrations drawn from analytic formulas. It is well known that the formulas of analytics are independent of geometrical representation. So far as the analytic reasoning goes, we are free to choose n planes of reference, if we make no attempt at spatial representation. These formulas, however, admit of such representation when there are only three perpendicular planes of reference; and if n such planes were possible, then a formula involving n planes would also be representable. But this is far enough from proving that n planes are possible; it only deduces a consequence from an assumed possibility. But there is no need to have recourse to elaborate formulas to deduce this small conclusion. There is to the uninitiated a certain air of mystery in an involved and transcendental formula, and especially in a formula for a "pseudo-spherical" surface, which may serve to impose on the illogical mind, but the argument from such a formula is in nothing better than the following: In algebra, a can be represented by a line in space, a^2 by a plane surface, and a^3 by a cube; a^4 and all higher powers are unrepresentable. So far as algebra is concerned, it is a mere coincidence that a, a^2, and a^3 are spatially representable, and the algebraic analysis goes on in complete independence of space. It deals with numbers and their relations, and these are logical, and not spatial. But it would be quite easy to say that, if space had n dimensions, then a^n could be spatially represented as well as a or a^2 or a^3, and the argument would be just as forcible as the mass of what is uttered on this subject. In fact, mathematicians have fallen a prey to their own terminology in this matter. Through desiring to

give the utmost generality to their analytic formulas, they have constructed them without any regard to actual space. Then they have discovered that, to make them representable, certain limitations must be made. Thus actual space is made to appear as a special case; and this is called flat space, Euclidian space, etc. But, by applying an adjective to space, they have suggested to themselves the possibility of other spaces, and forthwith any given set of analytic assumptions passes for a space of the *n*th order. By this time the illusion is complete, and the request for a proof that those spaces of the *n*th order represent anything but analytic assumptions is resented as unkind.

The other class of arguments confounds the dimensions of things in space with the dimensions of space itself. If we omit reference to the three perpendicular planes of reference, a thing may have any number of dimensions. The various utterances concerning a curvature of space are all instances of this confusion. What is meant by a curvature of space itself is something which defies all comprehension. It is assumed that, in case of such curvature, straight lines would at last return into themselves; but the simple fact would be, not that space is curved, but that the line is not straight, but curved. This would be quite intelligible, while the doctrine of a curved space is quite unintelligible. If it be said that straight lines never occur in reality, we have no objection, provided the claim be proved; but this is different from affirming that truly straight lines are not straight, but curved. The geometer does not assume anything about the reality of lines, but contents himself with showing what would be true of such lines, if they did exist. To determine the content and implications of our space-intuitions is his only aim; and, knowing that these intuitions are purely mental products, he is entirely free from doubts whether, in some outlying regions of space, these principles may not be invalid. Space being in the mind, and space-figures being mental constructions, they will always have the meaning

which the mind assigns to them, and hence can never be twisted out of their proper significance. This principle of a curvature of space has been invoked to save the universe from finally running down. If space be curved, then the outgoing energy will at last be restored, and the system may keep agoing. But there is no need of the unintelligible assumption of a curvature of space to express this result. We can simply say that, if the nature of reality be such that radiant energy moves in curved lines, then it will at last come back to the point of departure. Of course, to make this assumption of any use, we should have to make many others, but, such as it is, it is an attack, not on our space-intuition, but on the first law of motion. In short, all the illustrations of a space of n dimensions can be brought into entire harmony with our space-intuition by substituting for a curvature of space a curvature in space, and for n dimensions of space n dimensions of things in space. This part of the doctrine seems to be largely due to the pestilent practice of viewing straight lines as segments of circles with an infinite radius. This custom, together with the allied one of viewing parallel lines as meeting at an infinite distance, has its practical advantage, but when it results in confounding all definitions and in uttering complete nonsense, it is high time to inquire whether the advantage be not too dearly purchased.

A poor argument, however, though a suspicious circumstance, is not a disproof of the thing to be proved. The doctrine of n dimensions can be tested only by a direct attempt to realize its assumptions. Where, then, is the nth dimension to be found? Zöllner, in his explanation of the disappearance of material bodies in spiritistic performances, assumes a fourth dimension of space, into which the bodies are drawn by the spirits. If there were beings who could observe only two dimensions of space, then a body which moved in the third dimension would disappear from their vision. If, now, there be a fourth dimension, then the spirits have only to draw the body into the fourth dimension

to render it invisible. It would seem, then, that the fourth dimension interpenetrates the three dimensions. The solid body which disappeared was not out of the room, but out of its three dimensions. And yet there was no point in the room which could not be defined in a space of three dimensions. The fourth dimension, therefore, is not something added to the three dimensions, but is something coincident with them; that is, it is not a *space*-dimension at all, but, if anything, it would be a state of matter in which it would not appear in any way. The necessity of putting the fourth dimension within the three dimensions deprives it of all right to be called a dimension of space. Upon the whole, it is not likely that the performances of sleight-of-hand tricksters will contribute much to philosophic discovery.

The relation of the doctrine to geometry is not clearly settled in the minds of its holders. Some would view it simply as an extension of our present geometry; while others would view it as an attack upon it. If we conceive of beings dwelling in a plane and limited to conceptions of lines in a plane, it is possible that such beings should form a valid plane geometry; and if afterwards they should advance to a conception of the third dimension of space, their early geometry would be extended merely, and would be as valid as ever. Now, in the same way, it may be claimed that a new dimension of space would only extend our present geometry without in any way discrediting it. In that case, the doctrine could be tested only by inquiring whether the notion of a new dimension represents anything more than a gratuitous assumption which defies all construction and comprehension. But the most of the holders of the view regard it as conflicting with received geometry, and this position makes it possible to test the view by reflecting upon the character of geometrical truth. If that truth be strictly true, then any doctrine which conflicts with it is false. The believer in n dimensions will have to disprove

geometry before he can maintain his theory. If he insist that straight lines return into themselves, that only shows that he means by straight lines what others mean by curves. If he claim that parallel lines may meet, it only shows that he means by parallel lines what others mean by converging lines. Nor must he be allowed to make irrelevant appeals to the nature of things, for geometry does not concern itself with the nature of things, but with the nature and implications of our space-intuition.

A final word must be said concerning the unity of our space-intuition. It is often assumed that there may be beings which see things in only one or two dimensions, and they would, of course, be as positive about the impossibility of a third dimension as we are about a fourth. We know, however, that they would be mistaken, and what better right have we to insist on our view. If the fourth dimension be assumed to contradict what we know of the three dimensions, we should have the best right for rejecting it; and even if it were assumed only to extend our view, we should have a right based on the unity of our space-intuition. For these beings who see things only in one or two dimensions are pure myths, and their possibility is far from apparent. To begin with, the assumption that reality admits of any number of space-intuitions falls back into the popular form of Kantianism, according to which reality itself is quite indifferent to the forms of thought. But this is to divorce thought and reality entirely, and to leave the thought without any ground or explanation. But if reality is to explain thought, then a given phase of reality admits only of a given representation in thought. This notion that thought can shift about and view reality in any and every way, betrays a total lack of appreciation of causation; it is the superstition of a time which had no conception of law whatever. Besides, our intuition of space is not built up by adding one dimension after another; but the first and second dimensions are reached by abstracting from the unitary intuition

of a space of three dimensions. Given this intuition, it is easy to attend to one dimension to the exclusion of the other two; but they could not be directly reached, for the following reasons: Suppose a being with an intuition of only one dimension of space. At first we are tempted to think of that one dimension as a line; but this it could not be, because, to see it as a line, the being must be outside of the line, and the line must be across the direction of vision. But this would imply two dimensions of space—the direction of the line of vision, and that of the line perceived. If we confine him strictly to one dimension, the line must take the direction of the line of vision, and this would become a point. But this point again could never be known as such, except in relation to other points outside of the line, and as this is contrary to the hypothesis, it could never be known as a point at all. The line itself is without breadth or thickness, and the being, if it knew itself as related to the line, must know itself as in the line; and all its other objects must be in the line, and hence all alike must be known as without breadth or thickness. For us who have the full space-intuition, it is easy to abstract from two dimensions and consider only the line, but for the being who has only the one dimension, the space-intuition would be impossible.

The same is true for the two dimensions. In this case, the being would be in a plane, but without any thickness. He cannot rise above the plane to look at it, for this would be to invoke the third dimension. He must stay then in the surface, and must find all his objects in that surface. But there can be no doubt that we are led to the conception of a surface only by our experience with solids; we reach it by abstraction of the third dimension. If there were no third dimension, we should certainly never have come to the notion of either line or surface. This being, however, who is in the surface, and who knows nothing of any points outside of the surface, would never know the surface at all. The surface is conceivable only as a limit between different

parts of space, and as these are impossible, the limit between them is also impossible. We view our space-intuition as properly a unit and not as compounded of separate factors, and these factors which we separate in thought are abstractions, which are possible only through the unity of space as a form of three dimensions. All our dealing with the first and second dimensions of space imply the three dimensions. For the present, those who affirm that space may have *n* dimensions must be judged either to be calling a series of analytic assumptions by the misleading name of space, or else simply to be making a noise.

CHAPTER II.

TIME.

According to the popular view, the world is in space and has its history in time. We have found ourselves compelled to deny that the world is in space, for spatiality is only phenomenal. We have next to inquire whether the world's history in time is an ontological or only a phenomenal fact. Kant made the same argument do for both space and time; but there are many difficulties in the case of time which do not exist in that of space, and which compel a separate discussion. The subjectivity of time is by no means involved in that of space. At the same time much that was said in the previous chapter will apply here.

As in the case of space, we distinguish between the ontological and the psychological question. We do not ask how we come to the notion of time, but what it stands for after we get it. Is it an existence, or a mode of existence, or only a mode of our thinking?

Kant set the example of calling space and time forms of intuition, and this has led to a very general assumption among philosophers that we have a proper intuition of time, such as we have of space. It is, therefore, a matter of great surprise, on looking around for this intuition, to find it wanting. We grasp coexistences in a single space-image which is *sui generis;* and when we think the things away, we are still able to outline the space as such. With time this is impossible. We cannot comprehend events in a single temporal image, and when the events are thought away

there is nothing remaining, even in imagination, which has a temporal character. As has often been pointed out, all our representations of time are images borrowed from space, and all alike contain contradictions of the time-idea. We think of it as an endless straight line, but the conception fails to fit; for the points of such a line coexist, while of the time-line only the present point exists. We think of it also as a flowing point which describes a straight line, but here also we implicitly assume a space through which the point moves; and without this assumption the illustration loses all meaning. Or if we wish to form a conception of earlier and later, we do it by positing a line over which we are to move in thought; and we measure the time by the motion and its direction. The temporal before-and-after is represented only by the spatial before-and-after. Nor are we content to borrow figures from the one dimension of space; in dealing with the system we generally have two dimensions, and sometimes three. Since space is filled with coexistences, all of which are alike in the same time, the time-line is extended to all these. Thus the line becomes a cylinder, and the point becomes a plane; while the time passed over by the moving plane remains behind as a kind of third dimension. But in all these cases we have only space-images, which are applied to time only by metaphor. We cannot, then, properly call time a form of intuition corresponding to it. In itself it is rather a certain unpicturable order of events. Whenever we attempt to picture it, we replace temporal sequence by spatial sequence.

What, then, is time? The popular view of time closely resembles that of space. Time is conceived as an existence *sui generis*, which exists apart from things, losing nothing by their absence, and gaining nothing by their presence. It is independent, and hence without any essential relation to being, but moves on in ceaseless and steady flow forever. Like space, it is one of the necessities which being can neither create nor annihilate, and to which it must submit.

This view seems self-evident in its clearness at first glance, and it would not be surprising if some speculator should order up an intuition in support of it. But, in spite of the intuition and the apparent self-evidence, the clearness of this view turns out, upon inquiry, to be delusive. It is untenable on two accounts: (1) By making time independent of being it sins against the law of reason, which forbids all plurality of independent principles. This fact, which we have sufficiently illustrated in previous chapters, is conclusive against the independence of time. Whatever time may be, it is no independent reality apart from being. (2) The view which regards time as a real existence is hopelessly unclear and inconsistent in its assumptions and implications. Many qualities and functions are attributed to time in spontaneous thinking, which have only to be pointed out to be rejected, because they are inconsistent with the time-idea. To begin with, it is not clear whether time, in the popular view, is regarded as standing or flowing. Sometimes it is said to comprehend in its unity past, present, and future alike; and in its totality it is identical with eternity. There is but one time, as there is but one space; and all particular times are but parts of the one time. Sometimes it is said to flow, and sometimes it is mentioned as the standing condition of all flow. In one view time itself flows, and events flow with it; and in another view time stands, and events flow in it as a space, or through it as a channel, or move across it as a background. All of these conceptions appear in the popular thought of time, and all are attended with great difficulties. If we regard time as a whole as existing, and thus embracing past, present, and future, then time as a whole stands, and the flow is put in things, and not in time. In that case the distinction between past and future would not be in time itself, but in things, and especially in the observer's standpoint. The past would not be the non-existing, but that which has been experienced. The future also would not be the non-existing, but simply that which

we have not yet experienced. There would be nothing in this view to forbid the thought that things might coexist at different points of the temporal sequence. There would also be nothing in it to forbid the conception of a being which should fill out the totality of time, as the omnipresent fills out space, and for whose thought the past and the future should alike coexist. Thus quite unexpectedly we come down to the notion of the eternal now. But this is just the opposite of what the popular view means to say. Common-sense insists that time itself flows as well as the events within it. In truth, this notion of an empty time, with things flowing through it, is simply the image of empty space which has been mistaken for that of time. But, on the other hand, if we do not regard time as existing as a whole, then we are shut up to the affirmation that only the present exists. This view also is held by spontaneous thought; and upon occasion it is stoutly affirmed that all existence is contained in the narrow plane of the present. But the present has no duration, and is not time at all. It is but the plane which, without thickness, divides past and future. Time, then, is not made up of past, present, and future, but of past and future only; and, as these do not exist, time itself cannot exist. It avails nothing against this conclusion to call the present the passage of the future into the past; for this passage must require time, or it must not. If it require time, then it is itself susceptible of division into past and future. If it be timeless, then time once more falls into past and future, and has no existence whatever. Besides, it is not easy to see how we can speak of the passage of the future into the past when both alike are non-existent. Such a passage can be represented only by a reality moving across a certain line, but which is equally real on both sides of the line; and this notion is inapplicable to time. When the moving reality is real only on the line, it cannot cross it. It is equally hard to see how, on this view, time can have any duration. The past was once

present, so that past time is made up of moments which once were present. But if the present have no duration, no sum of present moments can have any duration. Nor does it relieve the matter to say that time, like space, is continuous, and that units of both are but arbitrary sections of the indivisible. Space can, indeed, be divided by a plane into right and left, so that the space to the right and that to the left shall make up all space; but this does not represent the relation of past and future, for the two divisions exist as real in the case of space, while in time they are non-existent. If the space occupied by the plane were alone real, their space also could not exist, for the plane is only a limit, and occupies no space. And if the plane should move under such circumstances, it would not pass over any space or generate any volume, for each integral of volume would perish as fast as born. The plane would continue to be all, and space would be nothing. This is the case with time. The plane is all, and duration is never reached. When we attempt to conceive duration, we must have recourse to space-illustrations, which are implicit contradictions of the time-idea. Time cannot exist, and things cannot exist in time. But if, to escape these difficulties, we allow that the present is a moment with proper duration, it is plain that this moment must lie partly in the past and partly in the future, or else that duration is not indefinitely divisible. Either assumption would swamp us by bringing the time-idea into contradiction with itself.

The notion of a resting time is in sharp contradiction to all the current notions of time; does the notion of a flowing time fare any better? We will not insist that the notion of a flow in time is itself a metaphor borrowed from space, and cannot be represented without thinking of a channel or a background through or across which the flow takes place. The notion itself is inconsistent. If time as a whole flows, then we have a flow, that of time, which is not in time. But if this flow be out of time, why not all other flows?

To meet this objection, it is said that not time as a whole flows, but only its several moments. But this view is a return to the notion of a resting time. It implies that time is not the sum of its moments; for if it were, the flow of the moments would be the flow of time as a whole. Time, then, would be the resting background of the passing moments. But in that case the difficulties just mentioned would all return, and we should have the additional problem of the relation of the moving moments to the resting background and to one another. The rest does not explain the motion. Moments, moreover, are only arbitrary divisions made by the mind itself; and if they were not, it is hard to see why the moment *a* should give place to the moment *b*, or how *b* could be distinguished from *a* prolonged. The view really hypostasizes the moments, and attributes to them a power of mutual exclusion and propulsion. It posits an interaction among the moments, and makes them things. The impossibility of this view is self-evident. Time itself, then, must flow; but how the flow of time in itself could be distinguished from its non-flow it is impossible to tell. Each moment is exactly like every other, and hence is undistinguishable from any other. Hence in pure time, flow and non-flow would be without distinction; not to mention the fact that the flowing time would need another time to flow in. Even the direction of this flow is not clearly determined in the popular view. Is it from the future to the past, or is it from the past to the future? When we speak of the world-movement, we always think of it as having moved through the past, and as progressing towards and through the future. But when we speak of the flow of time, we often reverse the movement; and, instead of making the past penetrate the future, we let the future vanish into the past. This arises from the implications of the metaphor employed. In case of a flowing stream, the movement is towards the observer on the one side and from him on the other; and up-stream is on the side from which

the movement comes. But the time-movement brings the future nearer and nearer, and carries the past farther and farther away. Hence the movement is thought of as from the future towards the past. Thus the movement of time reverses that of things; and yet we do not hesitate to speak of time as flowing and carrying all things with it. But, leaving this critical scruple, the notion of a resting time contradicts all notions of time; and, on the other hand, the notion of a flowing time results in a mental vacuum. Both views involve not merely mystery, but inconsistency and contradiction. Their exceeding clearness and self-evidence are due to the space-metaphors in which the doctrines are expressed; and these metaphors, upon examination, turn out to be inconsistent and inapplicable.

The other functions which are attributed to time as an independent reality are still more impossible. Time, as a reality, is said to condition all change and activity; but this is impossible, unless time be an agent. The conditions of change are not to be found in time, but only in things. Change is always an effect, and requires a cause; but no one views time as causal. On the other hand, when the conditions of an effect are present, there is no need of time for its realization, as if the flow of empty time could give to reality some power which it does not possess. An eternity of void time would contain nothing which an infinitesimal time does not; and neither is a source of power. Hence in inquiring for the causes of an effect, we leave time out of the question; because it can add or subtract nothing. The delay of an effect, therefore, is not due to the lack of time, but to the fact that not all the causal conditions are fulfilled. Without making time a cause, we cannot allow that change has any ground in time, but must found it only in the metaphysical interactions of things. But we cannot make time a cause without violating all our notions of time, and without providing another time as the condition of its action. If, then, we consider time as either

resting or flowing, it is quite impossible to assign any articulate relation in which it can stand to things or events. It neither acts nor is acted upon, but remains a mere ghost outside of being, contributing nothing and determining nothing. It does not even measure anything; for our units of time are not taken from time, but from some change in things—a revolution of the earth, the swing of a pendulum, etc.

Thus the notion of time as a real existence shows itself on every hand as a congeries of contradictions, and must be given up. The impossibility of more than one independent principle forbids us to admit the independent existence of time. Whatever it may be, it depends on being as a consequence or creation. But the attempt to think of time as a substantive fact breaks down from its inherent unclearness and contradiction. This view of time, when analyzed, is always found to deny itself. Conceived as resting or flowing, time is absurd. Conceived as real, it cannot be brought into any relations to things without positing an interaction between them; and then we need a new time as the condition of this interaction, and this would lead to an endless regress. Time, then, cannot be viewed as a substantive fact created or uncreated. As a whole, time does not exist, and reality is not in time any more than it is in space.

The reality of time as commonly held cannot be maintained; we have now to inquire whether the ideality of time is any more tenable. According to this view, time, like space, is only the subjective aspect of things and processes which are essentially non-temporal. Since the time of Kant, this view has been held as being as well established as the ideality of space; but in fact it is much more difficult to receive than the latter. We have a clear experience of the possibility of thinking and feeling apart from space. We do not regard our souls as spatial; and space-relations do not enter into our internal experience in any way. That there

should be existence apart from space is not, therefore, so difficult a conception. With time the case is different. It enters into our entire mental life, and cannot by any means be escaped. Hence we cannot appeal to any non-temporal experiences to aid our thought; and nothing remains but to analyze the notion, and see if we cannot reach a standpoint from which the difficulties may, at least to some extent, disappear. The holders of the doctrine have taken it all too easy in this respect. They have contented themselves with arguments which show the ideality of space, and have not bestowed upon time the attention which the peculiar difficulties of the problem demand. We proceed to examine the attempts to make the subjectivity of time credible.

If reality were a changeless system of things in changeless relations, like the members of a thought-system, or like the ideas of Plato's philosophy, it would be easy to view the sequence of things in our experience as only a sequence of knowledge, and as due entirely to our finiteness. Thus, mathematical truths coexist; but we grasp them successively, not because they really succeed in time, but because our finite minds are unable to grasp them all at once. Hence we are often tempted to think that the earlier propositions in geometry precede and found the later. But a moment's reflection convinces us that the only relation in this case is that of logical sequence, and that the apparent temporal sequence is merely the reflection of our own finiteness, which compels us to grasp successively what exists simultaneously. A perfect insight into truth would grasp it in one changeless intuition, and the illusion would not exist. If now the world were such a system of logical relations, it would be entirely credible that time is not only subjective, but exists only for the finite, being in every case but a reflex of limited power. It might be said that even in this case we could not dispute the reality of time, for time is given not merely in the movement of the outer world, but also and pre-eminently in the movement of thought. But this

objection would be invalid, for this psychologic time would be nothing but a subjective fact, and would have no significance for the changeless reality, or for the omniscient mind which should grasp it in its changeless intuition. Time would be simply a movement in the finite mind, while for the infinite there would be an eternal now.

Unfortunately, this illustration is not entirely applicable to the case in hand, at least unless we adopt the Eleatic notion of being. For the Eleatics there is no need of time. Action and change do not exist; and things are but the eternal consequences of being, just as all mathematics is eternally existent in the basal axioms and intuitions. In such a scheme, time cannot be anything but an unaccountable illusion in finite thought. But we are already committed to the Heraclitic view of being as the only one compatible with the law of causation. For us, things are not resting in changeless logical relations, but are active and changing; and hence it is impossible to reach the ideality of time by eliminating change from being. We must put motion in things as well as in the observer. But, on the other hand, the notion of time seems the great dividing-wall between Heraclitus and the Eleatics. When we exclude time, cause and effect must coexist; and then the effect is not produced by the cause, but is only its logical implication. Without a real before-and-after, it seems impossible to prevent the dynamic relations of reality from vanishing into purely logical relations; and this would be to abandon Heraclitus and return to Spinoza and the Eleatics. The alternative can be escaped only by showing that change does not imply time as an actual existence, but that time is only the subjective appearance of change. If this can be made out, there will be no difficulty in accepting the ideal theory.

But, before passing to this question, we must consider an objection springing out of the illustration from a changeless system. It may be said that we confound time with duration. Time itself may be viewed as a correlate of change;

but if there were no change, the changeless would still endure. If, then, we should adopt the Eleatic conception of changeless being, so that all the consequences of being should changelessly coexist with it, being as a whole would still have duration. There would be no sequence, but there would be duration. This distinction between time and duration, though it has often appeared, especially in theology, we cannot view as tenable. For duration can only mean continuous existence through time, and without the notion of time duration loses all significance. The only reason for distinguishing separate times in the changeless would be the sequence of mental states in ourselves; and this sequence itself is change, and hence contrary to the hypothesis. We can give duration significance, as applied to the changeless, only on the assumption of an independent flowing time, which moves on ceaselessly and carries being with it. But this view we have found empty and impossible, and hence we do not allow that duration has any application to changeless existence. Such being simply is, and the distinction of past and future does not exist. Even the "is" we view as an affirmation of being, and not as a present tense. The difficulty in accepting this view is due partly to an implicit return to the notion of an independent time, and partly to the fact that even in such a fixed state we assume ourselves as present with all our mental changes.

Time, then, depends on change; and the idealist's claim must be that time is but the subjective aspect of change, or the way in which we conceive change. An attempt is often made to escape time by a rhetorical device, as follows: Long and short are relative terms, and our estimate of duration is purely subjective. The time which is long to one is short to another, according to the state of mind. With God a thousand years are as one day; and even to the old man a long life is as a tale that is told, or as a watch in the night. The whole of human history is nothing to the periods of geology; and these, again, shrink to insignificance when we

ascend to the cycles of astronomy. What, then, it is said, are all finite periods to Him who inhabits eternity? Remarks of this kind have a certain value in arousing the feeling of wonder; but they are valueless in philosophical speculation. No doubt our feeling of length of time is purely relative and subjective; indeed, if the world-process did not exist as a common time-keeper, every man would have his own time. Time is one only because we measure it by reference to the same objective process, or to the same consciousness. But the before-and-after of things is not a matter of feeling. Relatively, the whole measure of finite existence may shrink to a span, but the time-order remains unchanged. Something more powerful, therefore, must be found, if we are to succeed in reducing time to a purely subjective existence.

The argument has been partly anticipated in a previous paragraph, when speaking of time as a cause of change. We continue it by pointing out that change itself is non-temporal, or without distinction of before-and-after. In the first place, as we have before pointed out, change depends not on time, but on the interactions of things; and when the conditions of change are fulfilled, there is no reason why the change should delay. If we suppose that time does something which was lacking, or breaks down some hinderance to the change, or exercises some repressive action, we make time a thing with active powers; and this view every one repudiates. But if we do not do this, there is no escape from admitting that the fulfilment of the conditions and the entrance of the change are absolutely coexistent. For empty time can do nothing; and one cannot see why, in such a case, a greater flow of time, provided the phrase in general meant anything, should be more effective than a lesser flow. Certainly n minutes could do no more than $\frac{1}{n}$ minutes; and infinite time would furnish nothing not contained in infinitesimal time. The integral of emptiness is always emptiness; and no addition of zeros can produce a sum. We

must, then, regard the event as coincident with the fulfilment of its conditions. Any given change is timeless; and it is impossible to detect in it any element of before-and-after. If A becomes A_1, the change must take place in an indivisible moment, that is, it can occupy no duration. As long as A and A_1 are separated, even by an infinitesimal moment, so long A is A and not A_1. It does not first cease to be A and then become A_1, but it ceases to be A in becoming A_1. The ceasing and the becoming are identical; they are but opposite sides of the same fact, and are without temporal distinction. If we attempt to make such a distinction, we involve ourselves in absolute contradiction, as Zeno long since pointed out. But if becoming is non-temporal, then the fact that reality is in action and in change does not imply the reality of time; and the distinction of before-and-after which we make are but the mental co-ordinates by which we get the equation of becoming; and time is but the subjective aspect of change or becoming.

The following objection at once emerges: the single instance of change, as from A to A_1, may indeed present no distinction of before-and-after, but the sequences of reality are manifold, and stretch from A to A_n; and A_n again is removed from A by an indefinite number of intervening changes. In the world-process, for example, the series of changes is practically limitless, stretching through ages and ages; and it is quite idle, then, to seek to escape time by eliminating it from a single change. It must be eliminated from the whole series before we can renounce it. But, for some reason or other, we are not as much impressed by this objection as we are expected to be. For in the world-process there is perpetual flow and becoming; and if the passage from A to A_1 shows no sign of before-and-after, then the passage from A to A_2 shows also no such trace, and hence the entire process from A to A_n cannot show it. A_n is separated from A not by time, but by the intervening members; and the relation of A_n to A is for the pure reason

not a relation of sequence but of dependence. It is this relation which for our time-thought appears as sequence. There is no before-and-after in reality, but a variously conditioning and conditioned complex of interacting things; and the before-and-after is but the subjective aspect of these metaphysical conditions and interactions. But if we insist that time is a true reality, and that things are in it, we are shut up to the admission that the whole series of things coexists in the present. For since empty time can do nothing, either to hinder or help, and since being is in perpetual flow, the beginning and the end must coincide in time, or occur in the same moment. Every effect is given simultaneously with its conditions, and each effect in turn becomes the cause of new effects, and these are likewise simultaneously given; and thus the whole series coexists. The before-and-after, then, would exist in pure duration or absolute time, while in things, where we seem first of all to find it, there would be no sequence at all.

But another objection awaits us, drawn from our conscious experience. It will be alleged with great positiveness that, however it may be with the world-process, we know that the mental process involves time. We know that we have lived through the past, and we are able now to compare it with the present; and any attempt to make time subjective merely must be shattered on this fact. We answer that the question is not about the facts of consciousness, but about their interpretation. Without doubt, the mind as phenomenon comes under the law of time and sequence, but the problem is to know whether this sequence exists as an objective fact for the pure reason. If the conclusion of the previous paragraph be allowed for change in general, and for the world-process, it must also be allowed for the mental process. Even our acts are all performed in relation to some phase of the world-process; and if this process have no distinction of time, then our acts also have no such distinction, except in appearance. They exist for the pure reason in a non-

temporal realm, though to our time-thought they put on the form of sequence in time. We cannot speak of them as separated in time without falling back into the impossible notion of an independent time.

The last paragraph is well calculated to exhaust the reader's patience entirely, and, as we do not wish to draw his wrath upon ourselves, we propose to let the idealist expound his own view and defend himself for a while. Any theory, the reader exclaims, which requires us to believe that our acts have no difference of date, may well be left to itself, for it cannot but perish of its own absurdity. The idealist replies that this objection rests in a misunderstanding of the ideal theory. When speaking of reality as non-spatial, we were met by the question, Are, then, things not separated in space? and, if not separate, are they all coincident in space? The reply was that, for reason, things are neither together nor separate, but such, in their metaphysical interactions, that they appear as together or separate. And this appearance, again, we also declared to be no arbitrary product of our minds, without any relation to things, but only the translation into the forms of sense-intuition of metaphysical processes unlike those forms. Our space-intuition, therefore, is not without its reason and ground in the nature of things, although it exists as such intuition only in the perceiving mind. The same holds true of time. Here, also, the question arises, If events are not successive in time, are they not properly coexistent, so that the past is not past, and the future is not future? Nero is now burning Rome, and the unborn babe now lives. The answer is, that even coexistence, as thus used, is a temporal idea, and that events are not temporally coexistent any more than they are temporally successive, but that things are such that they appear in our thought as coexistent or successive. This appearance, also, is not arbitrarily imposed by the mind on its objects; it is the subjective aspect of change, and, as such, is founded in things, and cannot be changed by the mind. The doc-

trine, therefore, does not imply that events can be conceived as temporally coexistent, any more than the ideality of space implies that things shall be conceived as spatially coincident. The attempt to form such a conception, in either space or time, involves a complete misunderstanding of the doctrines, and, of course, results in failure. The doctrines in question allow that space and time are absolute necessities of thought in certain realms, but forbid us to apply them beyond those realms. Such is the idealist's answer. It can hardly be called satisfactory, but we reserve criticism.

The idealist's claim, then, is not that change can be eliminated from the universe, or from the mental life, but, rather, that change itself, when viewed by the pure reason, shows no sign of before and after. These are simply the co-ordinates of the conception of change, but the fact itself is one, and, temporally, indivisible. The idealist further claims that the doctrine sometimes held, that time is succession, does not differ essentially from his own; for succession is only a relation of events, and hence is incapable of objective existence. Besides, on this view, succession itself is not in time, and does not require time. To say that it is in time would be to say that succession is in succession, and is conditioned by succession. But this doctrine, which reduces time to succession, is generally accompanied by implicit assumption of an empty and flowing time, in which succession succeeds. If we strike out this inconsistent and impossible notion, the doctrine reduces at once to the ideal view; for, before and after no longer refer to a temporal distinction, but solely to relations in the series of sequences. The conditioning is before, the conditioned is after, and the before-and-after is but the form in which the mind represents to itself this relation of conditioning and conditioned. Difference of time would mean, objectively, nothing; and, subjectively, it would mean our presence with different parts of the series. That part of the series with which we were not in immediate contact would appear either in the past or

in the future, and there would be no other test of past and present than our subjective position. Just as each man makes his own here in space, so each conscious member of the series would make his own now in time. This view that time is succession contains nothing to forbid the thought that the entire series might be as present to the unconditioned reality as what we call the present is to us. The past is past for us, and the future has not come; but this distinction represents no fact of reality, but only expresses our peculiar conditionedness. The doctrine that time is but succession cannot escape these conclusions without taking refuge in the notion of an independent time, whose ceaseless flow is the background and possibility of succession. But this view is utterly untenable. The idealist further adds, that the succession in consciousness, of which the realist makes so much, is misinterpreted throughout; for, in order that succession should be known as such, the knower must exist apart from it. If there were nothing unchanging and timeless in the mind, the knowledge of succession could never arise, because there would be no abiding standard with which to compare it. The mind must gather up its experiences in a single timeless act, in order to become aware of succession. The conception of sequence not only does not involve a sequence of conceptions, but it would be impossible, if it did. The conceptions which are arranged in a temporal order must coexist in the timeless act which grasps and arranges them. The perception of time, then, is as timeless as the perception of space is non-spatial. The things which are perceived in time must yet coexist in thought, in order to be so perceived. Hence the very necessity of thinking in time proves that the pure reason can, and must, transcend time. The idealist, then, concludes once more that time is only subjective.

Is there, then, no difference between the past and the future? The idealist replies that there is the greatest difference between them, but that it is not a temporal one. In

speaking of the relation of time to change, we pointed out that time has nothing to do with change, and that the series A, A_1, A_2, A_3, . . . A_n, by which we represent the world-process, is essentially timeless. We have simply a relation of cause and effect, without any admixture of time-elements; and the notion of time can only be the translation of this causal connection into terms of sequence. If, now, we suppose some perceptive being in the midst of this process, say at A_m, who could discern the order of dependence among the members of the series, he would perceive that each member is conditioned by the preceding one, and conditions the succeeding one. A_m is conditioned by A_{m-1}, and conditions A_{m+1}. The attempt to represent this relation in thought results in their arrangement in a temporal scheme, in which the cause is made the antecedent and the effect the consequent. Antecedence and sequence is the universal form under which the mind represents to itself causation; but, when we reflect upon the matter, we find that time does not enter into the reality, but only into the appearance. To return, now, to our being at A_m, his own position will constitute for him the present. He will perceive, too, that A_m conditions all the higher members of the series, and hence he will locate them in the future, and he will make them far or near according to the complexity of their conditionedness. A_{m+1} will be conditioned only by A_m, while A_{m+2} will be conditioned by both A_m and A_{m+1}; hence it will be put further on in the series. This being will further perceive that all the lower members of the series condition A_m, or his present, and hence he will put them in the past, and at greater or less distances, according to their relations to A_m. If, in the series, this being should discover an unconditioned member, the regress would stop at that point, and that member would appear as eternal. Thus a tendency to represent dependence by temporal antecedence and sequence would produce in such a being the perception of a temporal order, even in a perfectly timeless

system. That there is such a tendency in the human mind cannot be denied, for it is so strong that we are always tempted to resolve logical and dynamic sequence into temporal sequence. But we have seen that the dynamic sequence bears no marks of time, and hence we must conclude that the temporal order of things exists only in thought, and is purely a product of the observing mind.

The idealist has expounded his view at great length; but it is doubtful if he himself is fully satisfied. When he began his exposition, his aim was to show that change does not imply time; but in the latter part, change disappears and dependence takes its place. Here the aim is to show how, in a timeless system of conditioning and conditioned members, the appearance of time might arise as the way in which we represent dependence. But this is really a change of front; and it must be declared unsuccessful. The question must still turn upon the nature of change and its relation to time. There is one fact in our temporal experience which is fatal to the attempt to make dependence take the place of change. It is, indeed, conceivable that in a changeless system the relation of dependence should be represented as that of before-and-after; so that for every being at different points in the system, all the lower members should seem to be in the past, and all the higher members should seem to be in the future. But in such a case, every being would have a fixed present. The being at A_m would always have his present at A_m; and past and future would be fixed quantities in experience. But this is not the case. A_m does not remain the present, but forthwith gives place to A_{m+1}; and this in turn is displaced by A_{m+2}. Thus the future is ever becoming present and vanishing into the past. But this fact is impossible so long as there is no change in reality. Hence change can never be made phenomenal only, but is a fact of reality itself.

This leads us to consider the idealist's attempt to elimi-

nate time from change. His claim that there is no empty time between changes, no matter how long the series, is correct. We join him also in repudiating time as an independent reality, and we have pointed out that if time were real, all events must be coexistent. But there is one point which he has overlooked. That which is between A and A_n is not time, but the intervening members of the series, and the corresponding changes. And because there is no independent time, these members cannot be said to coexist. To do so, is to bring back the very notion of an absolute time which we have repudiated. But of these several members, the existence of any one excludes the existence of all the rest. The members of a space-series can coexist, but the members of a time-series are mutually exclusive. This is the great difference between the two series; and this mutual exclusion makes it impossible ever to regard the members of a time-series as coexistent. Whenever we think it possible, we are really mistaking a space-series for a time-series; and owing to the fact that we always intuite time under space-forms, this mistake is very easy. Returning now to the idealist's criticism, we find him misled partly by the attempt to find all things coexisting in the same moment of absolute time, and partly by the confusion of space-metaphors with temporal reality. He claimed that as time is no independent reality, we cannot say that succession takes place in time. Succession is not in time, and difference of time means only difference of position in the series. Hence he urged that there might be some being in constant contact with every member of the series, and for whom the entire series might coexist. In this remark the idealist betrays the misleading influence of the space-metaphor by which he represents the time-series to his thought; and he further overlooks entirely the peculiarity of the time-series —namely, that its members exclude one another. It is this fact also which excludes the paradoxical claim that events are either coexistent or not coexistent. If time were sim-

ply a relation of dependence, then there would be no common time in which things coexist; but it is in addition a series of which one member exists to the exclusion of all the rest. Hence the other members do not exist in a non-temporal realm, but do not exist at all. For the rest, the idealist's exposition is correct. The series A, A_1, A_2, A_3, . . . A_n, is not in time; and between A and A_n there is no time. Neither is A earlier than A_n in any absolute time; for that which makes a thing earlier or later is its position in the series. But A and A_n, though not separate in any absolute time, are nevertheless not coexistent; for their relations are such that the existence of either excludes that of the other. The objective fact is being passing from state to state; and these states are mutually exclusive. Change does not, indeed, require time; but it results in a new state which excludes, and hence succeeds, its predecessor. This fact of change is basal. It is not in time, and it does not require time; but it founds time; and time is but the form of change. In the common thought time exists as a precondition of change; in our view change is first, and time is but its form. It has no other reality.

The view thus reached is a compromise between the ideal and the current view. Absolute time, or time as an independent reality, is purely a product of our thinking. In this sense, then, the world is not in time. But change is real, and change cannot be conceived without succession. In this sense, the world-process is in time. But distinctions of time do not depend on any flow of absolute time, but on the flow of reality, and on the position of things in this flow. To say that there is time between distant members of the series, means only that reality changes in passing from one state to another; and the amount of time is not simply measured by the amount of change, but is nothing but the amount of change. The rate of change is the rate of time; and the cessation of change would be the cessation of time. With the disappearance of absolute time, the

present acquires a new meaning. It is no longer the simple plane of division between past and future, but it is the real as distinct from what has been real, or what will be real. Present thoughts are those we actually have. Present states are not states which exist in a present time, for there is no time; but they are those states in which reality is actually expressed. A given state is present as long as it lasts; and a given thing is present as long as it endures. This use of the word is quite in harmony with usage. We speak of the present world, meaning the actual system. We speak also of the present life, and mean always the one that is actual and real. But reality is not in the present, but by its active existence it constitutes the present. To be real in being and to be present in time are phrases of identical meaning.

The rejection of absolute time, and the identification of time with change, lead to the question as to the unity of time. Might not change in different beings have a different rate, so that each being would have his own time? In reply it must be admitted that the unity of both space and time is primarily individual. The individual intuition of space will always be a unit; but the unity and the fact of a common space depend upon the existence of a common object. In like manner, time will be a unity for each consciousness; but the unity and the fact of a common time depend on the existence of a common process. Primarily the rate of time, also, is individual. A world of thinking beings only would have no common time-measure; and each one would estimate time by the changes in his own consciousness. Psychologic time, in distinction from objective time, would alone exist. The impossibility of agreement in such a case is shown by the different estimates we form of time according to our circumstances. But the coexistence of thinking beings with an independent reality, which is also in incessant change, enables them to compare their individual times with a common time-piece; and thus

the world-process furnishes to our minds a regulator whereby to adjust our time-estimates. Without this process, the unity of time would disappear into a multitude of individual times as unrelated as the times and spaces of one dream are to those of another. The question whether the world-process itself is constant, admits of no solution. To give it meaning, we must either assume an absolute time whose moments flow at a changeless rate, or we must compare the world-process with another, assumed to be constant. But we should gain nothing in either case. If the flow of absolute time meant anything, the constancy of its rate would be an assumption. The second world-process with which we compare the first is a figment of abstraction. The actual world-process is the basal fact; and by its constant procession, it founds time and time-measures.

And here we must refer to a point dwelt upon in speaking of the relation of the infinite to law and truth. We there pointed out that reality in action is the basal fact; and that by abstraction from the direction of this action we come to the notion of laws of mind and of nature. The mind is not something which obeys laws of thought; but it exists as a thinking being, and thus founds laws of thought. These laws express nothing but the modes of mental action, and are simply abstractions from these modes. In like manner, natural laws express only the way in which objective reality acts. But in both of these cases, after having formed the conception of law, we next carry the law behind the thing, and conceive it as a pre-existent necessity to which reality must submit. Then we speak of the reign of law, and fail to see that we are really trying to subject reality to its own consequences. The same error appears in our notion of time. The objective fact is reality in action, and by its action it founds an order of change and becoming. But by abstraction from this order, we get the empty form of change, and this we next erect into a pre-existent necessity which conditions all being. But here

again we mistake an abstraction for a fact, and subject reality to its own consequences. That principle which implies that the activity of being shall be successive is not to be found outside of being in any pre-existent realm of fathomless necessity, but must be found in being itself. In this sense, time, like space, is a principle of being; and it conditions being not as an external fact, but as an inner principle.

It only remains to inquire into the relation of time to the infinite. The results reached in the discussion compel the following conclusion. A being which is in full possession of itself, so that it does not come to itself successively, would not be in time. Such a being can be conceived as having a changeless knowledge and a changeless life. As such, it would be without memory and without expectation, but would be in the absolute enjoyment of itself. For such a being the present alone would exist, and its now would be eternal. For those who conceive the infinite as such a being, the infinite must have a strictly non-temporal existence. All change in the infinite, as thus conceived, would not be a succession of different states, but the ceaseless conservation of the same state. To express it by a series, the order would not be A, A_1, A_2, etc., but simply A, A, A, A, etc.; and this would reduce to A. There would be neither past nor future, but an abiding present. On the other hand, we may regard the infinite as moving through a series, A, A_1, A_2, A_3, etc., and as so conditioned in itself that it can realize these states only successively. In that case, the infinite would be in time as much as anything is in time; that is, its development would be successive. But this is the conception of a blind evolution, and does not exist for us. From the theistic standpoint, the infinite must be viewed as possessing an eternal now, so far as itself is concerned. God, then, is not to be viewed as conditioned by time with regard to his own self-consciousness and self-possession. In discussing change, we saw that being, from a purely ontological standpoint, is process, and that a fixed point in being

cannot be found in some rigid core of substance, but only in personality. The same conclusion emerges here. God is not independent of time in his own existence as the absolute being, but only as the absolute person. It is only in the self-centred and self-equivalent personality that we transcend the conditions and sphere of time.

But God is not merely the absolute person, without a past and a future; he is, also, the founder and conductor of the world-process. This fact brings God into a new relation to time. This process is a developing and changing one, and hence is in time. Hence, also, the activity of God in this process is essentially a temporal one, and God himself is in time, so far as this process is concerned. But here, too, there is a certain timeless element. As knowing all the possibilities of the process, the divine knowledge of the system may be viewed as without succession, and hence as non-temporal. But, as the chief agent in the process, and as incessantly adjusting his activity to the several stages of the process, both his activity and his knowledge of the advancing reality must be in time. A changeless knowledge of an ideal is possible, but a changeless knowledge of a changing thing is a contradiction. A knowledge of reality, at any moment, must embrace reality as it is; and if, in the next moment, reality has changed, the knowledge must change to correspond. The infinite, then, must be in time, so far as the world-process is concerned, as this involves sequence in both action and knowledge. But the discussion of this subject must be left to theistic philosophy.

CHAPTER III.

MOTION.

THE phenomenality of space implies the phenomenality of motion. Motion has been identified by some speculators with change in general, and in this sense it is not phenomenal. This view of motion appears in the Eleatic speculations, and, in modern times, Trendelenburg has presented motion as the common element of the outer and the inner world. But this is not the common meaning of the word. Motion is, indeed, a form of change, but all change is not motion. We may, also, speak of a movement in thought; but the expression is purely figurative. Motion, in its common use, means only change of place, or the successive occupation of different spatial positions. As thus used, it implies the reality of space, and is limited to space as its field and the ground of its possibility. In accordance with our general plan, we start with this popular view, and hold our own theory in reserve.

Motion itself is indefinable, except in terms of itself. Like being, change, and action, it must be accepted as an idea which cannot be constructed out of anything else. If we define motion as a change of place, or as a passage from one point of space to another, we but define the same by the same. The change of place, or the passage from point to point, is unintelligible without the intuition of motion itself. To one who has the intuition, such definitions serve to unfold its implications, but to one without the intuition they are as useless as a definition of sight is to the blind.

Zeno's claim that motion implies contradiction has been sufficiently noticed in speaking of change. In modern times, a series of objections have been based on the antithesis of absolute and relative motion. Absolute motion is declared impossible, and the universe, as a whole, is said to rest. Rest and motion, then, are alike relative and real only as relative. These objections may have puzzled many, but have probably convinced none. They simply leave the mind in that most uncomfortable position of being sure that there is a fallacy without being able to point it out. But, in this case, it is not difficult to detect both the error of statement and the fallacy of argument. The former is discovered by simple definition. Absolute rest can only be defined as continuous existence in the same position in absolute space. Absolute motion, therefore, would be the successive occupation of different positions in absolute space. If, now, there is no absolute motion, then all things are absolutely at rest, or remain in the same points in absolute space. In that case, relative motion, which is declared to be real, becomes a mere delusion, with no ground whatever. If, then, we hold that motion of any kind is more than a phenomenon, we must affirm the reality of absolute motion, and view relative motion only as the way in which sundry absolute motions appear from our standpoint.

The fallacy of the argument against absolute motion is no less easily detected. It consists in assuming that the mental co-ordinates by which thought grasps the fact are necessary to the fact itself. We are told, for example, that absolute motion is indistinguishable from absolute rest, because motion implies fixed points of reference, and in absolute space there are no such points. All the points of space are alike; there is no here and no there, for these terms are purely relative to the spectator. But motion is a passage from here to there, and hence is always relative to the spectator, and therefore impossible in pure space. To all this the reply is that motion is, indeed, grasped and measured in thought

only by setting up some point or axes of reference; but these mental co-ordinates are nothing to the motion itself; least of all do they make the motion. We cannot define or represent a motion to ourselves, without assuming some standpoint in relation to which the motion is to be measured; but the motion itself is under no obligation to be represented, and moves on according to its own laws, whether we think of it or not. It certainly never occurs to the astronomer to fancy that the celestial equator and meridian, to which he refers the stellar motions, make the motions. He recognizes that these planes of reference are but the makeshifts of our minds in order to grasp the fact. If, then, absolute space were real, there need not be the least difficulty in admitting absolute motion. The fact that every point in such space is distinct from every other point would suffice for its affirmation. The entire system might be viewed as journeying through infinite space, or as revolving in it. Such a conception of the entire system, of course, could never be tested, for no facts whatever could prove or disprove it. Nothing short of a revelation would suffice for a decision. Applied to our solar system, however, it would represent the fact. Its centre of gravity is in motion, and the system, as a whole, revolves. In addition, the planets themselves are revolving on their own axes in absolute space. To conceive such motions, we need points of reference; but the existence of the motions, if space be real, is quite independent of our thought and its scaffolding. Possibly it may be urged that motion is, at least, relative to space itself, and that when space itself is reckoned as a part of the system, motion can only be relative. This may be admitted. Space does not move, and motion is in space. But this motion would change the definition, and cancel the problem altogether, in any intelligible sense.

Concerning the relation of motion to reality, the history of speculation shows a complete change of view. The ancients, without exception, held that the natural state of

things is rest. Things are put in motion only by external agency, and, resigned to themselves, come quickly to rest again. Motion was regarded as a "violent state" of things, and the moving thing was supposed to have an inner struggle to escape from it. The source of this belief is evident. In our sense-experience, we have abundant illustrations of the cessation of motion and of the difficulty of initiating it. Besides, we find in ourselves a weariness, resulting from continued effort, which compels us to seek repose; and this, by a kind of mechanical anthropomorphism, is easily transferred to things.

This view of earlier speculators has given rise in later times to the opposite idea, that motion is the natural state of things. The conception of matter as having no principle of movement in itself, and as tending to rest, led necessarily to the doctrine of at least a prime mover in the universe, who should also be immaterial. But such a view could hardly help giving aid and comfort to theistically-inclined speculators, and could not fail, therefore, to be obnoxious to such as did not share such tendencies. These side-issues have not been without their effect in mechanical speculations. A more respectable ground of the view is the desire to escape admitting any moving forces in matter. With this aim, various theories of molecular vortices have been invented, in which atoms originally endowed with motion are made to produce all material phenomena by simple variations of the rate and direction of motion. But, whatever the source of the doctrine, it is hard to give to natural any clear meaning in this connection, and, in its obvious sense, the doctrine is false. If motion were an essential and inalienable endowment of every element, and not a variable product of moving forces, it might be called natural to matter. In such a case, any element left to itself would move with a fixed velocity, as a result of its own nature. But this view is untenable, and leads to results directly contradicted by the facts. It may well be that motion is a universal fact, as an effect

of the moving forces of the elements; but this is far from making it an inherent and essential attribute of matter. In fact, motion is neither natural nor unnatural, but a condition in which matter may or may not be; and in this sense matter may be said to be indifferent to motion. If in motion, it remains in motion; and if at rest, it remains at rest. This is the only view which does not conflict with the law of inertia—a law which, whether an apriori truth or not, is still too well attested by consequences to be questioned as to its validity. The motions of the elements are the products of their interaction, and the condition of any element, whether in motion or at rest, has its external ground.

But this indifference of matter to motion must not be confounded with the claim that matter is strictly the same, whether at rest or in motion. This view rests partly upon the abstractions of mechanics, in which matter appears as the rigid and indifferent subject of motion, and partly on the fact that matter can begin and cease to move without any change of its prominent qualities. Hence unreflective thought, which thinks mainly under the law of identity, holds that matter in motion is the same as matter in rest. Now, whatever view we may take of motion, this view is false. The motion of a thing is simply its successive appearance at the successive points of its course. But this succession must have some ground. A moving body, at a given point of its path, differs from the same body at rest in the same point; otherwise, the effect would be the same. It is idle to say that the difference is that one moves and the other rests, for the movement of the first is but its passage from the point in which it is at any instant to the contiguous one, and there is no ground for this passage, unless the moving body have a different internal state from that of the resting one. No more does it avail to say that the ground of the motion is the attraction of other bodies, for this attraction acts by no external grip or drawing, but by

producing a new state in the thing, and this state is the immediate ground of the new manifestation. Motion, therefore, is but the spatial manifestation of a peculiar metaphysical state in the moving thing itself, and this state is what distinguishes the moving from the resting thing. Without this admission, we cannot escape Zeno's conclusion that motion is impossible; for, at any point of time, the moving body is at a given point in space, and if at that time and point; it is metaphysically the same as if at rest in the same point, then the moving body rests, and can never move. Both the law of inertia and that of causation would forbid its motion. The latter would forbid it for the lack of any ground for the motion, and the former would forbid it because the body, being at rest in a point, must continue so. We must, then, admit that, even in the indivisible point of time in which there can be no spatial manifestation, the moving body differs from the resting one by an internal state, which is the true ground of the motion. To this state we give the name of velocity. In itself, velocity is not motion any more than a force is a line. Motion is a measure of velocity, just as force may be represented by a line, but both alike are forever different from either motions or lines. If velocity itself were motion instead of its ground, then, in a point of time, a moving body could have no velocity, and hence no ground for passing from the point of space in which it might be. But, at any instant, a moving body has velocity which is not made, but measured, by the space passed over in the unit of time. If the velocity be variable, then it is measured by the space passed over in the unit of time, supposing the velocity to become fixed at the instant of measurement. This fact implies that velocity itself is quite different from its measure. It is that inner state of a thing of greater or less intensity which impels it incessantly to change its place. While, then, we can represent it as the quotient of the space and time, or as the first differential coefficient of the space and time, we must not

identify it with either. Such a blunder would be like identifying the lines and differential coefficients which represent force with force itself.

There is a strong tendency in the human mind to mistake abstract nouns for things. Accordingly heat, electricity, affinity, etc., are often spoken of as real agents. This fact, together with the traditional conceptions of motion in speculative quarters, has led to a very general hypostasis of motion. In the Cartesian physics motion was viewed as contributed from without by an original act of God, and its quantity was conceived as fixed. Other speculators, who were averse to appealing to God, announced that motion is as eternal and as indestructible as matter. Some difficulty was found in the fact that this indestructible motion is not an essential attribute of any particular thing, but is divided up variously among different things, and is forever changing its form and place. Still it was held that there is a fixed amount of motion in the system which may have been originally communicated from without, and which may be eternal. This view was further mixed up with the fancy that all communication of motion is only by impact, and it even passed into an axiom that only the moving can cause motion. These notions are not without traces, even in current speculation. Mr. Spencer has made what he calls the continuity of motion, whereby he means the indestructibility of motion, one of the foundation-stones of his philosophy. But these notions are not in accordance with current physical conceptions. The necessity of assuming moving forces in the elements has taken all credit from the claim that only the moving can cause motion; while the observation of any case of vibratory motion, as of a pendulum, suffices to overthrow its pretended foundation in experience. Besides, as motion is only a condition of a thing, it can never be transferred, but only propagated. No thing can transfer its own proper motion; it can only produce an equivalent motion in another. The antecedent motion is destroyed, in the sense in

which any changing quality is destroyed; and the resultant motion is created, in the sense in which any new state is created. That is, the beginning and cessation of motion involve creation and annihilation in the same sense in which change in general involves them. Some speculators have declared it unthinkable, and, indeed, it is unconstruable in its inner genesis; but it is positively mortifying to find arguments offered for the indestructibility of motion which, if they had any force, would shut us up to the dead rest of the Eleatics. Finally, the quantity of motion in the system is not constant. This is a dogma which has long been superannuated in physics. Those who affirm it fancy that they have the support of physics; but the conservation of energy, which they apparently have in mind, is a totally different doctrine.

The law of continuity is one which has had great prominence in the history of speculation. This law was first formulated by Leibnitz, and was at first confined to motion only. Afterwards it was extended to every department of thought and experience. The evolutionists in particular have made it one of their first principles, and the most fundamental law of progress. In this wide sense the law has no fixed, and scarcely any assignable, meaning. As used by some speculators, it seems to exclude all antitheses whatever; and Spencer's attempt to deduce all heterogeneity from the homogeneous may be viewed as an attempt to give the law this universal significance. The Leibnitzians, also, were fond of making the increments of variation infinitesimal in all directions, so that all widely separated groups are joined by missing links or are produced by infinitesimal variations. On the basis of this conception, Leibnitz ventured to affirm something like the development of species, and the indistinguishability of all realms at their points of junction. He also ruled out all absolute oppositions like rest and motion, and all incommensurable realities as space and time. On the same ground he denied all beginning in time and all

bounds in space. Rest is insensible motion. Space and time are ideas; and creation means only dependence. This doctrine of continuity in general has had great favor with flighty and impatient speculators from its first announcement, because it is at once so effective and so cheap. If missing links are sought for and fail to be found, it is easy to say that the law of continuity proves that they must have existed even if they cannot be found. The distinction between the organic and the inorganic is easily removed by the same method. In psychology, also, the empiricist has no difficulty in showing that sensation is the only fact, because to allow anything different would be to break continuity. But while one speculator deduces life from the lifeless by the principle of continuity, another denies the possibility on the same ground. Continuity, he urges, demands that life shall come from life, and forbids any other view. Materialism likewise is affirmed and denied in the name of continuity. Unfortunately these speculators have never bethought themselves to give a general demonstration of this law, nor even to define the various senses in which it is used. Sometimes it is simply a denial of creation and the supernatural. Sometimes it means that nature never makes a leap. Sometimes it means that all phenomena are but phases of a common process, and that from any fact whatever in the system we can pass to any other, however different, by simple modifications of this process. In short, it means anything which happens to be desirable. But, except with the most flighty, the law is not thus vague and general. It does not affirm a continuity between all forms of reality, as if all the antitheses of the system could be reduced to a common measure and a common process. It rather affirms only a continuity between the several members of a series. If, for example, there be a progress in the series A, A_1, A_2, . . . A_n, then the progress from A to A_n proceeds through A_1, A_2, etc. It is the continuity of space, or of time, or of a given being, and not an identification of everything with everything else.

We return now to the continuity of motion. This has been taken to mean the indestructibility of motion, and in this sense the doctrine is false. But, apart from this misunderstanding, the doctrine is ambiguous, as it may be referred to space or velocity. A very excellent work on mechanics contains the following definition: "Motion is essentially continuous; that is, a body cannot pass from one position to another without passing through a series of intermediate positions; a point in motion, therefore, describes a continuous line." Here the doctrine is referred to space alone. But as originally expressed by Leibnitz, and as commonly understood, it refers rather to velocity, and means that a moving body, in passing from one velocity to another, passes through all intermediate velocities. In this sense of the law Leibnitz and his followers regarded it as a self-evident truth, and from it they deduced a number of propositions, notably that absolutely solid bodies cannot exist, as the collision of such bodies would also collide with the law of continuity. Others, as Prof. Bayma in his "Molecular Mechanics," have deduced from the same law both the necessity of moving forces in matter which act at a distance and also the punctual character of the elements. It is plain that if two absolutely solid bodies collide, the change of velocity must be instantaneous; for the moment of collision is indivisible, and if they rested for two consecutive instants, the law of inertia would keep them at rest forever. There would, then, be an instantaneous passage from motion to rest, or from rest to motion, or from one velocity to another, and thus the law of continuity would be broken. Hence bodies must begin to act upon one another before the time of geometrical contact; and hence must be endowed with moving forces which can act at a distance. It is plain that the law of continuity cannot be held on the old theory of geometrical contact in the collision of bodies; and hence the law in this sense is a necessary truth only so far as the theory of moving forces in matter is a necessary truth.

The further reasons given for the doctrine are mostly inconsistent with one another. It is said, for example, that velocity cannot increase by leaps without implying that the same body has two different velocities at the same instant; but this is the same fallacy which appeared in the objections to change. Instant is taken to mean a short duration, whereas in the case assumed it would not be a duration of any sort, but a limit. It would express the point of time when one motion ceases and another begins. On one side of the point the velocity would be v, on the other side it would be v_1. Moreover, these objections are inconsistent. They do not rest on the greatness of the increment, but on the fact of any increment whatever. Hence $v + dv$ is just as obnoxious to this objection as $v + v_1$, where v_1 is a finite velocity and dv is an infinitesimal. If, then, the objection were allowed, the changelessness of the Eleatics would be the necessary conclusion; and a variable velocity of any kind would be impossible.

The end aimed at in this doctrine is much better reached by saying that no finite force can generate a finite velocity in less than finite time. This statement will always be tolerably secure from attack, because the intensity of a force is measured by the velocity it can generate in a finite unit of time. If, then, a force should generate a finite velocity in infinitesimal time, it would generate an infinite velocity in finite time, and thus by definition would be infinite. But this conception, again, assumes that the force shall act incessantly like gravitation. In the case of absolute solids, impact would be attended by the generation or destruction of a finite velocity in a point of time; yet the force would not be infinite, because such impact would necessarily be instantaneous in its action. Through overlooking this fact, some speculators have affirmed that in case of impact the force must be infinite; but their argument has always consisted in confusing action by impact with action by moving forces. And hence we conclude once more that the continuity of

velocity is a doctrine which holds only in a system which derives all motion from moving forces, which forces, again, act not only through space, but also through time. And even in such a system the doctrine assumes the reality of time, as if time itself had a significance for action. In our view of time, difference in the members of the same series is time itself. It follows, then, that any series which admits of division in thought will necessarily appear to be in time; and as we can carry the division of velocity to any desired extent, velocity must appear as reached by infinitesimal increments whose sum becomes perceptible only in finite time. We view velocity as quantity, and measure it by number. But quantity admits of indefinite division; and hence we are forced to make the final units indefinitely small. But after we have posited such a divisibility, we must of course view the whole as the sum of the infinitesimal parts implied in our position. Their summation in reality, however, must be successive. Hence, even in the case of impact of proper solids, if a body should instantaneously pass from velocity two to velocity four, we should seek to divide the increment into parts which must all be passed through, and should then try to reach the instantaneousness of the passage by increasing its rate to infinity. It is this fact, that the divisibility of a series is time, which makes the continuity of velocity apparently self-evident.

But we have pointed out that the continuity of motion may mean continuity in space. On the common view of space as containing things, this doctrine is beyond question. Sundry difficulties might be raised by a sensational philosophy, but these would all rest on a denial of the common view. Our own theory of space contains a paradox at this point. If space be subjective, things are not in space, but appear under the form of space, and space itself is only the form of this appearance. The position of things in phenomenal space is but an expression of their metaphysical relations to one another; and an apparent change of position is

due entirely to a change in these relations. It is, then, entirely possible that there should be changes of such a kind as to imply the disappearance of a body at a given point, and its reappearance at another point, yet without appearing at any of the intervening positions. Thus the appearance of a body at a point, A, is due to the fact that the sum of its interactions with other non-spatial realities prescribes the form and place of its appearance. It is quite conceivable that these interactions should next prescribe that it appear at A_n; and in that case it would disappear at A and reappear at A_n. But the complete absence of any such fact from experience points to a certain order and continuity of change in these metaphysical relations which underlie the appearance of motion. If this change were discontinuous, motion would also be discontinuous both in velocity and in space; and in that case all calculation would be impossible. The actual changes, then, are such that the appearance of the same body at A and A_n is attended by its successive appearance at A_1, A_2, A_3, etc. This order, however, is to be viewed simply as a fact, and not as a rational necessity.

But we shall find it of advantage to leave these general considerations, and pass to consider the more specific laws of motion. And fortunately we are not left to invent or discover these laws for ourselves, for the science of mechanics has done the work for us. We have, then, only to examine those laws which are found necessary in interpreting phenomena, and which are justified by experience.

The first and basal law of motion is that of inertia, according to which a body cannot start or stop itself. If at rest, it remains at rest; and if in motion, it remains in uniform motion in a straight line unless interfered with from without. Many attempts have been made to show this law to be a necessity of thought, but without success. If the non-spontaneity of the elements be allowed, the law is, of course, an identical judgment, for the law is simply a denial of spon-

taneity with regard to space-relations. A change of condition is always an effect, and presupposes some cause; and if an element has no influence over its own states, of course all change must come from without. But when the point is to know whether the law is an apriori necessity, we must inquire whether there is any ground for saying that the elements must be of this sort. That they are such may be allowed; but that they must be such is not made to appear. The apparent self-evidence in the case is largely due to the abstraction of a material point with which mechanics is wont to begin. This point is conceived as the inert and rigid subject of possible motion, and in itself is so emptied of all quality as to contain no ground of activity of any sort. The deduction of the law from this conception is easy enough; but this conception is a pure figment of the imagination. As applied to a real element, even the first part of the law, which asserts that a body at rest will remain at rest unless moved by something outside of it, is not self-evident. It is not self-evident that an element, if it could exist alone in space, could not, whatever its nature, begin motion; for motion, as we have seen, is but the spatial expression of an internal state, and if that state were given, motion would result. It is not self-evident that the inner changes of such a thing could never result in that state which expresses itself in motion.

The common proof of the first part of the law consists in bidding us conceive a single element in void space, and in pointing out that there is no more reason why it should move in one direction rather than in another. Then the conclusion is drawn that the element will remain at rest. But the law of the sufficient reason, to which appeal is here made, is a very treacherous ally. We could use it with equal propriety to prove that the atom could not be in space or in time. For every point of space or time is like every other, and hence there is no reason why it should be in one rather than in any other; and hence it cannot be in

either space or time. It is well known that Leibnitz, the inventor of this law, was perpetually on the verge of pantheism because of its influence. But we may allow that there would be no reason in space itself for motion in one direction rather than in another; yet that would not prove that there might not be a reason in the thing. In no case does space determine the direction of motion; this is due to the interaction of things, and the point here is to know why an element might not of itself pass into that internal state which appears as motion. It is said that if it did, the motion would not arise from rest, but from an internal motion; but the series of metaphysical changes in things are motions only in a rhetorical sense. If, then, a thing could exist alone and maintain a series of inner changes in its solitary existence, it is not inconceivable that it should pass into motion alone. For all we can say, there might be a tendency in things to seek a certain state, as in elastic bodies, where any departure from equilibrium results in an effort to restore the balance. A better illustration is found in our own mental life, where every state is not compatible with inner harmony, and in which there is a corresponding effort to restore the internal equilibrium. Things, then, might be such as to be in conflict with themselves when forced out of a certain state, and hence they might have an inner tendency towards that state, and this state might be one which should manifest itself as either rest or motion, according to its nature.

But it has been further said that motion could not result even in this case, because direction is necessary to motion. If, then, this state which implies motion should exist, it could not produce motion because there would be nothing to determine its direction. Motion would be possible in any one of an indefinite number of directions, and as every one would have as good a claim as every other, the motion could not begin at all. This is a return to the doctrine of the sufficient reason, and does not reach the difficulty. Since motion involves direction, we should simply say that

the state supposed to be produced would be one which should contain the ground of direction in it. Of course, the question comes up, Why one direction rather than another? And the answer must be a confession of ignorance. But for one who believes in the reality of space and time, the same question would arise concerning the existence of the element. It would be easy to develop a great astonishment over the fact that the atom should be in any one point rather than in some one of the countless other points, each of which has as good a right to its presence. And this astonishment would have as much ground as the wonder over the atom's motion in space. Provided the existence of an atom in space meant anything intelligible, its movement and direction would be no more wonderful than its existence in a fixed point. The fact, whichever it might be, would simply have to be admitted. Even in the actual system we come down to the same difficulty. It might be said that no thing can cause another to move by any attractive force, because the possible directions are infinite. The word attraction must not mislead us into overlooking this difficulty. It is by no means self-evident that motion must take place along the line which joins the bodies. For all we can say, it might be on any other line whatever. Hence the attracting body must also determine the direction, and by the law of the sufficient reason this is impossible. But by the law of fact the conclusion is absurd. Indeed, the entire process by which this law is deduced is purely fictitious. The single atom in void space is a contradiction, because the atoms have their existence and properties only in the system of which they are parts or implications. The sole use of such a fiction is to impress the law upon the imagination. It should never be tolerated for an instant as an argument. But if we will resort to such a fiction, we must declare that, for aught any philosopher or physicist knows, a single element in space might be such as to set itself in motion.

The second part of the law is just as little an apriori truth

on the current view of matter. To the unreflecting, indeed, it even seems false; but this is due entirely to the bondage of the senses. First, the constant direction is no necessity of thought. Direction itself is given from within, and not from without. Of course, in reality the direction is primarily determined from without, but only through an internal state, so that the thing is not drawn, but driven from within towards a certain point. The immediate reason why a thing is moving in a certain direction and at a certain rate is not found in external things, but in its own inner state. This is especially apparent on the current view that if outer things should all fall away, the thing would continue to move in the same direction and at the same rate. Direction, then, is finally given in the inner state of the moving thing. There is, therefore, no absurdity in supposing that a thing should change its own direction. That it does not do so is a fact, not a necessity. Here, also, appeal is made to the principle of the sufficient reason, and it is urged that there is no reason why the change should be on one side rather than on the other, etc. Of course, there is no reason in space, but to say that there is none in the thing is simply to beg the question. This part of the law also is manifestly no necessity, but at most only a fact.

And here we come upon a peculiar paradox in the theory which affirms a real motion in a real space. Motion, we have seen, is the result of an internal state; and direction is given in the same state. Motion and direction are inseparable, and both are the outcome of a peculiar inner state. This fact leads to a rather odd conclusion. Spontaneous thought finds no difficulty in affirming the existence of a thing in space, and also the mutual indifference of the thing and space. Space is not altered by the thing's presence or absence, and the thing is not affected by change of place. It is, then, quite indifferent to the thing whether it be in one point or another. The solar system moves through space, but remains the same. But, curiously enough, this indiffer-

ence cannot be maintained when the things begin to move; for then difference of direction, as well as difference of position, becomes possible. The first impulse is to say that difference of direction also makes no difference to the thing, that a thing moving north is in no respect different from one moving west. But this impulse is misleading. The difference of direction must have some ground in the moving things, and this can only be found in some peculiarity of internal condition, which holds one to its northerly, and the other to its westerly, direction. Without this assumption, there is no reason why direction should not incessantly change. If we should fall back on the law of the sufficient reason, we should be especially unfortunate; as the lack of any state determinative of direction could only result in the thing's coming at once to a stand-still. It will likely be urged that there is a sufficient reason for the thing's going straight ahead, in that it is actually moving in that direction. If, then, a thing moving west were internally exactly like one moving north, still each would continue its proper motion because already in it. This seems clear, but is really unconvincing. For motion is simply the successive existence of a body at successive points; and the fact that a body has been at points A, B, C, etc., is no reason why it should pass through the points X, Y, and Z. At any given point of time, there must be some reason why the next increment of the path should be in one direction rather than another. The path passed over is not in the thing, but behind it. Direction, geometrically considered, cannot determine anything. Why, then, shall the body at any point of its path take one direction rather than another? There is nothing to do but to declare that motion and direction are given as inseparable elements of the same internal state, and that this state varies with the direction. But, on the other hand, possible directions are numberless; and we are shut up to the affirmation that for each one of the directions there is a special and peculiar inner state. Thus we should have to give

up the indifference of things to space, and declare that all directions in absolute space have their representatives in the metaphysical states of matter. Of course, this paradox does not exist for the ideal theory of space; but the realist might find it hard either to escape it or to admit it.

It remains to consider the last factor of the law of inertia, the uniformity of motion when not interfered with by external objects. This also follows necessarily from the assumption that a material element cannot change its own state; but it is no more a necessary truth than the other factors of the law. But, curiously enough, a better argument can be made for this part of the law than for the others. If we assume that a finite change is reached only through successive increments, and hence that a given change is only the sum of the increments, then it is plain that there could be no change without the law; and hence motion could never begin nor end, as this beginning or ending would be a form of change. If, then, motion can begin or cease, the law of inertia must be admitted as an implication of this fact. Taking the case of beginning motion, it is plain that if every increment perished as fast as produced, there could be no sum. Each new increment would begin with zero, and could never get beyond it. Let us take the case of a body falling from rest. At the end of the first unit of time, which may be taken as infinitesimal, the body has a certain velocity from gravitation. In the second instant, the body is supposed to retain the velocity acquired in the first, and to gain an additional increment; and so on in successive instants. If, now, we suppose the acceleration uniform, the velocity at the end of a given time will be the velocity acquired in the unit of time multiplied by the number of units. But it is plain that this could not be the case if the law of inertia did not hold: for the first increment of velocity, dv, in the first instant, dt, would perish at once; and hence the next increment of velocity would begin not with dv, but with plain zero. Hence at the end of any time, t,

the velocity would still be zero, and the body would not have moved. It may at first appear as if the body should have moved some during the several instants, dt, but this is seen to be a mistake, when we remember that as long as dt expresses a real duration, we cannot assume that dv remains constant through dt without assuming the law of inertia. The untruth of the law would make even this impossible, and hence each minimum increment of velocity would perish as soon as born. While, then, we cannot directly prove this part of the law of inertia, we can show that without it no motion could ever begin. The corresponding argument, to show that motion could never cease, will suggest itself.

Respect for those who have urged this argument inclines us to accept it, especially as it is by far the best argument advanced. It does not aim to show that the law is a necessity of thought, but that it is a necessary implication of admitted facts. It depends, however, entirely upon the assumed truth of the law of continuity, or on the assumption that no natural force can instantaneously produce or destroy a finite velocity. If, however, gravity were capable of instantaneously generating any finite velocity, motion would be possible without the law of inertia; for velocity would be renewed as fast as lost, and this would be equivalent to the constancy of the original velocity. In a fountain under constant pressure the column of water stands always at the same height. There is, indeed, incessant going, but there is also incessant coming; and the one balances the other. If gravity were a constant force, no acceleration could occur under such circumstances; but if gravity itself varied, variable velocity would result. Nor would gravity in such a case be an infinite force; for it would never generate an infinite velocity. The summation of the finite velocities instantaneously produced into an infinite sum would be impossible without assuming the law of inertia. This law not holding, the velocity would remain finite, and the present order would remain unchanged.

There is no need to consider the pretended proof from experience. Nothing remains at rest absolutely, and nothing moves with uniform velocity in a straight line. If a body be thrown into the air, it quickly loses its motion even in the absence of that friction which plays so prominent a part in the alleged experimental proofs of the law. Assuming the law to be correct, we must account for these variations by external forces; and we throw on these forces the burden of explaining the variations. But why might we not assume the forces, and throw the burden of explanation on the laws of motion? Or might we not, in the spirit of Leibnitz's monadology, find the ground of all change in each element alone, so that they shall have various laws of motion according to the demands of the system? In that case the laws both of force and motion would be only the components into which the facts fall for purposes of our calculation; and the agreement of fact and calculation would only prove the practical validity of the laws, not their reality. If things can exist independently, this view is as good as any.

Thus far we have considered this law from the common standpoint of a real space with things moving in it. This view we have found to involve some peculiar paradoxes concerning the relation of space to motion and direction. In addition we have found reason to complain of the method of proof. This consists in setting the moving subject apart in unreal abstraction, and then deducing laws for reality from purely fictitious and impossible cases. Thus the idea of a system is overlooked entirely, and the attempt is made to find the laws of the system by denying in effect that a true system exists. The individual has been assumed as capable of existing by itself; and against this view our previous criticisms are valid. Of such elements, one law would antecedently be no more probable than another; and the validity of a law up to a certain point would be no warrant for its universality. If any deduction of this law is

possible, it must be from considering the nature of the system and not from reflecting on those parts which have been hypostasized into an unreal and impossible independence. It may, then, be allowed to inquire whether any rational insight into this law of motion can be reached from the general character of the system.

Cosmology deals only with the system of nature, or with what we mean by the physical system. But in discussing interaction we have seen that it is impossible to construct a system out of mutually independent elements. The nature and action of each thing must be determined by the nature and idea of the whole. But this idea itself can determine nothing except as it is set in reality. Hence the logical implications of the idea are realized in the actual members of the system; and the demands of the whole upon each are realized through the mutual interaction of the members. Each, then, is what it is, and does what it does, because all the rest are what they are and do what they do. Interaction in general means simply the determination of one thing by another; and in a system where there is nothing but interaction, the activities of each thing are necessarily objective, and the determinations of each thing are necessarily from without. But this is the conception we must form of the physical system. In it we know of nothing but interaction, or mutual determination. There is no ground for affirming any subjectivity or self-determination in them; and they are members of the system only as each is what the system demands. If in addition to their cosmological activity they also maintain an inner life, they belong by this element to the realm of psychology and not to cosmology. But a cosmology is possible only as the members interact and determine one another. Law and system would not otherwise exist. Hence the law of inertia in its fullest extent must reign in such a system. No element can change its own state whatever it may be; but the ground of change must always be found outside of the ele-

ment itself. If it were otherwise, then the state of an element at any moment would not be an expression of the demands of the system upon it; and this is contrary to the notion of a system. Not even the suggestion already made that things may tend to a certain state can be longer allowed; for things have no right to any state on their own account, but only to such as the state of the system as a whole demands. Hence change of any and every kind in a physical element must be referred to external causes. This is the law of inertia in its very broadest sense; and its application to motion is only a special and limited case. And we reach this conclusion not by considering such hypostasized impossibilities as the existence of a single element in void space; but by reflecting on the demands which a physical system must make upon each of its members. In so far as any of them are capable of independent action, they become rebels against the system or seceders from it. These considerations do not, indeed, prove the law to be an ontological necessity, for the system itself is no necessity; but they do prove that there can be no physical system without the law. We need not, then, doubt this law because we know nothing about the mysterious nature of things; for the existence of a system at all implies the law. Nor need the conclusion be confined to the physical elements alone. Even the finite spirit, to a very large extent, comes under this law; and so far as it does not, it exists in relative independence of the physical system. If the mental life were absolutely determined by our interaction with the system, the law of inertia, in its broadest sense, would be absolute for mind as well as for matter.

We have referred in the discussion of being to the attempts to deny a dynamic theory of matter on the ground of inertia. The vanity of these efforts appears from a simple inspection of the law itself. As applied to motion, it declares only that no element can start or stop of itself. But this fact has no relation whatever to the question of

moving forces, whereby they may cause motion in one another. In its broadest meaning, it denies that any element can change its own state, whatever it may be. But while this law does not exclude the possibility of moving forces, it does exclude the independence of the elements to which it applies.

The law of inertia is the basal law of motion. In addition, two others are commonly given, which are as much laws of force as of motion. The first of these, the second law of Newton, is that the amount of motion is proportional to the moving force, and is in the direction of its action. The first part of this law is simple enough. Motion being an effect, must of course vary with its cause; and, besides, the intensity of the force is measured by the motion it causes. This part of the law could hardly fail to be exact. But the second part of the law contains implicitly the doctrine of the parallelogram of forces, and this is not so self-evidently true. We postpone its consideration, and pass to the next law, Newton's third law of motion, the equality of action and reaction. This is not properly a law of motion, but of action. In speaking of being, we pointed out that there can be no action without reaction. In such a case the object would in no way determine the agent, and the effect would be created outright. Hence all interaction involves reaction, and we may lay it down as an axiom of metaphysics that there can be no action without reaction. But this axiom in no way determines the nature and form of the reaction, and is far from giving us the third law of motion. This law of motion is besides thoroughly ambiguous, and is self-evident only in one, and that its least important, sense. The action and reaction may be purely static, as when one thing rests on another. In this sense the law is a necessity of equilibrium. If the table did not press up as much as the weight on it presses down, it would be broken. The foundations must meet the downward pressure of the building by an equal upward pressure, or motion and col-

lapse will result. But action and reaction may be dynamic also, as when the earth attracts the sun and the sun attracts the earth; and in this case the law is no self-evident necessity. It is common to speak of this as a case of tension, and to illustrate by a tense cable. If a person in one boat pulls at another boat, each boat moves towards the other, and action and reaction are equal. At any point whatever in the cable there is equal tension in both directions. But this illustration is of no use until it is shown that attraction takes place through a cable. There is no difficulty in conceiving that a magnet should attract iron without being attracted by it. The magnet causes in the iron a state which tends to translate itself into motion towards the magnet, but this in no way implies that the iron must cause a similar state in the magnet. Neither act implies the other. The same is true for attraction in general. The attraction of any one element does not imply the attraction of any other. This is all the more evident from the fact that many physicists have spoken very freely of repulsive elements which meet attraction with repulsion. It is, indeed, a grave misuse of language to speak of anything as reaction which is not directly elicited by the preceding action. Repulsion due to pressure, or to repulsive forces called into play by previous motion, is properly described as reaction, because it results from the previous action; but the attraction of one element upon another is in no sense a reaction from the attraction of the other upon it. This confusion of so many things under a common term is what makes this law such an inexhaustible mine of truth in the view of English physicists. That the law, in this wide sense, is based entirely upon induction needs no further proof.

The next law of motion which calls for consideration is that relating to the composition of motions. This law is implicit in Newton's second law of motion. If the abstractions of kinèmatics were realities, we might at once allow the parallelogram of motions to be a rational necessity. If

the tendency to move in each of two directions is to be satisfied, it can only be as the motion is along the diagonal of the parallelogram on the lines representing the tendencies and directions. But, in reality, it is not a question of compounding motions, but of finding the resultant of forces which tend to cause the motions; and this introduces new difficulties into the question. The law is sufficiently justified in practice to exclude any doubt of its validity in all molar motions. Its necessity, however, is quite another thing, and depends on certain assumptions which are far from self-evident. The chief one is that each force shall have its full and proper effect in a crowd as well as when acting alone. Thus if A and B both attract C, the law assumes that each shall have its proper influence without regard to the other. On this assumption the resultant must be represented by the diagonal of the parallelogram on A and B. But this is so far from necessary that it is antecedently improbable. It would seem as if the effect of a new impulse ought to depend on the previous state of the subject. This is the case in the only subject of which we have direct knowledge. The effect of a new thought or desire depends very largely on the character of the thoughts and desires already in the mind. The same thing affects us diversely according to our mood or preoccupation. It is, therefore, a surprise to find that the elements are never preoccupied, but are always open to any new impulse whatever. This is so strange, and from the standpoint of the mental life so paradoxical, that we can allow the law only as a fact, and only so far as it is justified by experience. It is possible that in the molecular realm, especially in chemistry and biology, the law may be modified.

Another assumption is commonly read into this law which does not belong in it. The law itself says nothing of the nature or origin of the forces, but views them all alike as moving forces. They may be qualitatively distinct otherwise; but as moving forces they all stand on the same plane,

and their effects are combined according to the parallelogram of motions. But it is generally further assumed that the forces themselves act in the same way, whether singly or in a crowd. The action of a given element is not affected by aggregation, but only by its own position in space. The same amount of matter, at the same distance from the earth, will attract with the same intensity whatever its form may be. But this also is no necessity of thought, and from the standpoint of human experience it is antecedently improbable. If such variation were allowed, it would, indeed, increase the difficulty of calculation indefinitely; but this proves nothing. As it is, we regard the action of a compound as the sum of the acts of the components, and we reach the total action by summing up the effects of the separate factors. If it were otherwise, we should have a problem immeasurably more complex than that of three bodies. In the latter case we have to find the positions of bodies from forces which depend on the positions which are to be found; but in the former case we should have the additional difficulty of not knowing even the law of the forces. The parallelogram of forces might still be valid, but it would be useless. The actual forces would depend upon the aggregation or velocity of the elements, and could be known only from their resultant. Nevertheless, the independent action of each element as assumed in mechanics is so far from a necessary truth that it is not even known to be true at all except in the case of gravity. In particular it has been suggested as a help to the mechanical theory of life that possibly the elements in the organism no longer work under this law, but under some other which expresses the idea of the organism. In that case the elements would owe their properties to the mode of aggregation. It is difficult to get any clear idea from this theory beyond the negative suggestion that the common assumption of the independent action of each element may not be true. At all events it is plain that if the common doctrine is correct,

it cannot be viewed as a rational necessity, but only as a fact.

The science of mechanics is founded on the basal assumption of the spatial continuity of motion; and the application of the calculus assumes also the continuity of velocity. The laws of the science are the law of inertia, the equality of action and reaction, and the parallelogram of forces. These laws and assumptions constitute the outfit of the science; and all more general considerations are commonly ignored as having no practical interest. But with the exception of inertia we have found no rational necessity for any of these principles. They must, therefore, be admitted as simple facts or else founded in purpose. For the theist, the latter alternative is a necessity; but the nature of that purpose is very dimly seen. With the Cartesians, the constancy of the sum of motion in the system was the fundamental law of motion from which all others must be deduced. But this law is no fact of reality, and hence cannot be the ground of the laws of motion. Leibnitz and his followers insisted strongly on the contingency of the laws of motion and on the necessity of referring them to choice and purpose; and Maupertuis claimed to have found this purpose in what he called the principle of least action. For a time the law of least action was viewed as the fundamental law of motion from which all the others could be deduced. Like the law of continuity, this law was forthwith extended to everything and lost all definite meaning. In this generality, it gave birth in abundance to such principles as, Nature does nothing in vain, or Nature takes the shortest road to the goal, or Nature produces results in the simplest way. Such principles mean nothing and lead to nothing, unless we know what the aims of Nature are, and what the standard of least action is to be. Without such insight everything is arbitrary.

Euler defended this law as a metaphysical principle in

his "Letters to a German Princess;" but deduced it from a peculiar dynamic conception, according to which all moving forces are but consequences of impenetrability. The body attacked resists with just as much force as is needed to maintain its own impenetrability; and the amount of action is the least possible which will secure this end. Of course it could not react more than is necessary; for as soon as the attacking body is brought to rest or thrown off, the impenetrability of the body attacked is no longer imperilled, and action ceases. But in this sense the law amounts to no more than the third law of motion in its static sense, and is far from justifying the conclusions which both Euler and Maupertuis drew from it. Finally, as a law of motion the principle has no clear meaning. Laplace and Lagrange have shown that the principle, such as it is, is but a consequence of the laws of motion, and have denied, therefore, that it is a law of motion at all. But this fact in itself would not forbid that it should be viewed as the ground of those laws from which it is deduced. When premises have been obtained from a conclusion, there is no difficulty in recovering the conclusion from the premises. If, then, the laws of motion were consequences of the law of least action, this law could be deduced from the laws of motion. The real trouble is that the law is vague in its meaning and arbitrary in its determination of what shall be considered the standard of least action. When it is measured by the integral of the product of the mass into the velocity and the element of the path described, one cannot help feeling that this is a rather artificial standard of least action; and even this does not apply to many cases. While, then, we hold that the plan of the system contains the ground why the laws of motion are as they are, it can hardly be held that the principle of least action offers an end sufficiently clear in its meaning and obvious in its value to serve as their final cause.

The conservation of energy has likewise been offered as

the principle from which the laws of motion have been deduced. But this theory itself is only a complex consequence of the laws of force and motion, and depends upon them entirely for its proof. It is in no sense self-evident, as some speculators, in complete ignorance of its meaning, have sought to show. It cannot, then, be used to prove its own assumptions. Moreover, as an end, it has no such pre-eminent worth as to make it absurd to ask why such an end should be chosen. It hardly seems worth while to create a system simply that the sum of its kinetic and potential energies should be a constant quantity. If, however, it were revealed that this is the highest law of the system, then the laws of motion might be deduced from it.

All the laws of motion which have been mentioned apply only to translation in straight or curved lines. In both rotation and translation the elements of a body change their place in space. But why might there not be a rotation of the element on itself? The physicists have been much embarrassed to determine the forms of the various motions which constitute the different molecular energies. If the motions were all alike there would be no ground of difference in the energies; but it is a great puzzle to know in what the difference consists. Some physicists have suggested that the heat-motion consists in an expansion and contraction of the atom on itself. The rotation of the atom on itself seems to be quite as promising a fancy as this. By varying the plane and rate of such rotation, room for many new combinations would be given; and inasmuch as any hypothetical difference in the arrangement of the elements is always supposed to account for actual differences of outcome, no matter whether any connection between the alleged cause and the observed effect can be seen or not, this new factor for new permutations could hardly fail to throw a grand light on many of the obscurities of molecular mechanics.

Of course we do not fancy that theoretical mechanics should busy itself with questions of the sort discussed in this

chapter. It assumes the laws of motion and calculates their consequences. This practical procedure is all that can be demanded in practice, and is quite consistent with a complete ignorance of the underlying metaphysical questions. After the mathematician has said the most absurd things about matter and motion in general, he may still work his formulas with the utmost ingenuity and be the safest of guides in calculation. What was said in discussing space concerning the ideal theory may be recalled here. Whether motion be a fact of reality, or only an appearance, is indifferent to mechanics so long as we insist on fixed principles of translation into the forms of intuition. In that case the phenomenon can never contradict the fact, because it is the way in which the fact necessarily appears. There can be no visual opposition between the color we see and the vibrations which cause it; for these can appear to sight only as color. In like manner there can be no opposition between the unpicturable interactions which underlie the appearance of space and motion, and the appearances themselves.

CHAPTER IV.

MATTER AND FORCE.

One of the many crudities of uncritical thinking is the fancy that the content of the notion of matter is given in sense-perception. Accordingly, we often find matter treated as immediately and indisputably given, while God and the soul are viewed as hypotheses which are to be allowed only so long as the undoubted fact, matter, does not account for the phenomena. But our growing insight into the nature and possibilities of matter is continually displacing these provisional and hypothetical explanations, and will probably end in their abandonment altogether. Often enough the principle of parsimony is invoked to forbid the assumption of any but material causes before we have proved that matter is insufficient; and as this involves the proof of a negative, materialism has triumphed. This fancy that the notion of matter is immediately given results from confounding matter as phenomenon with matter as cause. Matter as phenomenon is given in sense-perception; but matter as cause can be reached only by reflection. It is a purely speculative and metaphysical notion, whose content can be determined only by reason. Matter as phenomenon is clear; it means the various bodies which our senses reveal. By matter as cause we can only mean the agent or agents which, existing or appearing in space, produce the appearances we call material. The problem is to pass from matter as it appears to matter as we must think of it; and this problem cannot be solved by the senses, but only by the reason. The senses

furnish the data. The speculative reason draws the appropriate conclusion. All theories of matter are alike speculative; and all alike modify the spontaneous judgment of common-sense. The hylozoist introduces an inner life and plasticity into matter of which the senses give no hint. The atomist also introduces forces and factors into the elements which are no facts of perception. The Cartesian pays so little respect to the senses as to identify matter with extension and make it omnipresent in space. From hylozoism to the various forms of atomism the theories are alike inferences, and not facts of observation.

In one important point the problem proposed has been solved by modern physics. This is the question between the atomic and the non-atomic views of matter. For various reasons speculators have been inclined to a non-atomic conception of matter. In particular, they fancied that such a view secured greater unity in our theory of things. They were also misled by the fact that the notion, matter, is one, to think that the thing must be one also. And since the notion is one, they fancied that things must all be accidents or modifications of one and the same matter. But the non-atomic conception has not only failed to explain material phenomena, but it leads to results which facts directly contradict. By consequence, physical science is based entirely on some form of the atomic theory. We accept the results of the debate without recalling it. Our work will be to discuss the atomic theory itself in order to see how the theory must be held in order to satisfy both the facts and the laws of thought.*

The immediate aim of the workers in any special department of science is to explain the facts of that department without reference to the facts of other departments; and

* For the worthlessness and untenability of the non-atomic theory, see Fechner's "Physikalische und Philosophische Atomenlehre." For a history and criticism of the various theories of matter, see Karsten's "Encyclopedie der Physik," vol. i.

they are satisfied if they succeed in getting some general way of looking at the facts of their own department which shall have even the practical value of helping the imagination and the memory. On this account the atomic theory takes on different forms according to the character of the facts on which it is based. For the astronomer, the atoms are simply centres of gravity; and for him molecular forces and etherial media are non-existent. Each atom attracts every other with an intensity which varies inversely as the square of the distance; and he needs no other assumption. But the physicist who studies other phenomena needs other assumptions. For him the atoms split up into two great classes of ponderable and imponderable, and are endowed with various molecular forces as well as with the universal force of gravity. Even these conceptions will be modified according as he studies heat, or light, or electricity, or magnetism. The conceptions which are all sufficient for one realm do not suffice for another. The chemist also builds up an atomic theory from the facts of chemistry, but his conception differs very widely from that of the physicist. The physicist makes much of the ether; while the chemist has very little use for it. The physicist conceives of the atoms as endowed with universal forces; while the chemist endows them with selective forces. The physicist urges the chemist to view the molecules as little planetary systems; but the chemist replies that such a conception is useless in his science. Except that the theories of both are atomic, they have very little in common. The mineralogist and physiologist in like manner introduce new conceptions. Unfortunately, very little attention has been paid by students of physical science to comparing and supplementing the several partial views which have thus arisen. Indeed, it is not clear that these views admit of being united into a consistent theory. Thus the doctrine is held in each department with only such exactness as the facts of that department call for; and if the conception prove a fruitful one in practice, or

even a convenient one for representing the facts to the imagination, little attention is paid to theoretical consistency or to agreement with the results in other departments. But, as thus held, the atomic theory can be viewed only as a convenient practical fiction like that of the two fluids in electricity; for it would be intolerable that every department of physical study should have its own peculiar set of atoms. Such a claim would explode the theory. It is necessary, therefore, in some way to unite the various conceptions into one. Yet, owing to the facts mentioned, while the students of physical science are agreed as to the necessity of an atomic theory as opposed to the continuity of matter, there is no agreement whatever as to the true conception of this theory. Accordingly, atomism has all forms from the corpuscular philosophy of the Greeks to the centres of force of Boscovich and the vortex-rings of Sir William Thompson. The most common form is a modification of the corpuscular philosophy. In this view the atoms and the void play their well-known part; but the atoms are enabled to play this part by the addition of moving forces which in some mysterious way dwell in the atoms without being a consequence of them, and yet are inseparable from them. In this view the atom is spoken of as the home, or seat, or fulcrum, of the force; and the force is viewed as imparted, implanted, located, etc. It is also variously proposed to view the atoms as alike in essence, but unlike in form; or as alike in form, but as unlike in size; or as alike in form and size, but unlike in grouping; or as alike in these respects, but unlike in energy or in intensity of action; so that difference of atomic weight, for example, shall not depend on a difference of size or quantity of matter, but on a different intensity of attraction; and, finally, it is proposed to view the atoms as qualitatively unlike apart from all quantitative and geometrical relations. Some of the atomic theories view the atoms as having all the properties of the bodies about us; and others view them as essentially unlike the bodies which they

found. The former are more in harmony with our spontaneous thinking, while the latter are more speculative and critical. But whenever any of these views claim to be more than convenient practical fictions, they must at least be self-consistent; and they must also meet those general demands which we make upon all reality. To determine the specific properties of the atoms will always belong to inductive science; to determine their general outline is the work of metaphysics.

The corpuscular, or lump, conception of the atoms has one very great advantage; it is easily pictured to the imagination, and calls for no effort of thought. It takes only the conceptions of space, form, and solidity with which we are familiar, and, with these, claims to solve all the problems which phenomenal matter presents. But, on the other hand, it has a methodological difficulty in that its explanations are but repetitions in the mass of what is given in the unit. On this theory, there can be no explanation of any property of body which is not first assumed in the atom. This is especially the case with extension and solidity. The extension of the mass is viewed as the sum of the extensions of the atoms, and the solidity of the mass is viewed as resulting from the solidity of the elements. Moreover, this theory has always had an idealistic factor in it by virtue of its excess of materialism. Looking at the moving atoms with the eye of pure reason, we see nothing but quantitative distinctions and relations. Qualitative distinctions and relations are contributed by the mind of the spectator; and these constitute the chief problem for explanation. Without the spectator the problems would not only not be raised, they would not even exist. A mind which could completely grasp the moving elements as they are in themselves, but not as they appear, would miss the most important problems of the system. Thus we reach the paradox that an absolute knowledge of the system would find in it very little that would demand interpretation. This difficulty exists not

only for the corpuscular philosophy of the Greek atomists, but for all the current schemes of mechanical evolution. In all of these the evolved products are phenomenal only, and hence exist only for the spectator. They have no significance for the realities which conduct or underlie the process, and are but the way in which we look at the eternal flow of being.

The corpuscular philosophy finds its purest illustration in the atomism of the ancient Greeks. The two factors of their view were the atoms and the void. The atoms were viewed as absolutely solid, and as secure in their solid singleness against all division and destruction. Moving forces were left out of the account altogether. But, apart from the fact that the mutual independence ascribed to the atoms made all interaction, even of impact, impossible, it has long been recognized that such atoms would explain nothing. In particular, the facts of chemistry call for an atomic conception which has little but the name in common with the ancient atomism. The atoms which modern science calls for are atoms which are not in mutual independence and indifference, but which are parts of a whole, and which are not left to chance as the ground of their orderly combinations. On this account the new conception of motor-forces has been added. But these forces have generally been added in a very clumsy way. A passive solidity has been assumed as a foundation; and then forces have been imparted to this inert lump in a highly mysterious fashion. No information is given as to where the forces come from, or what their inner relation is to the matter which they are said to inhere in, or inhabit. And yet, though matter and force are thus brought together by an act of pure violence, and though neither seems to give any account of the other, an edict is issued against separating them, and it even passes into a first principle that there is no matter without force and no force without matter. Meanwhile the corpuscular conception of the atom as absolutely solid and as hav-

ing a changeless volume is retained; and then to make room for motion and to account for the form and coherence of bodies, these atoms are held apart and together by their forces, and at distances compared with which the diameters of the atoms themselves are very small. But from this standpoint the need of viewing the atoms as corpuscles, or minified matter, disappears entirely. The phenomenal solidity of bodies, which is the only solidity of which we have any knowledge, is no longer the integral of the solidities of the atoms, but is purely a product of a certain balance of attractive and repulsive forces between the elements, and does not represent any property of the elements themselves. If we allow that the elements have an absolute form and solidity, we have also to allow that they never come into play in accounting for the properties of body; and that these properties are all the outcome of a dynamism which in itself is totally unlike the properties which it founds. Each element excludes others from its own space not by a passive solidity, but by an active repulsion. A repulsion between the surface of bodies which produces the effect of solidity can be shown by experiment. When one plate of glass is laid upon another it is found that there is no actual contact, and that an extremely great pressure is needed to bring them closer together. Indeed, solidity considered simply as space-filling could offer no resistance at all to the entrance of other bodies into the same place. If there were things between which no relation of repulsion existed, there is no assignable reason why they should not absolutely penetrate; and some speculators have suggested that chemical union may be of this sort. The mistake of this notion does not lie in a metaphysical impossibility, but in its inadequacy to the facts, pre-eminently those of isomerism. On the other hand, a solid without cohesive forces could not exist. For in every such solid it would be possible to distinguish different parts; and the only reason for the coherence of these parts must be found in cohesive forces between these parts. Hence,

in any case, solidity must be second and not first. The facts, then, are (1) that in determining the properties and form of bodies we are referred not to similar properties and forms of the elements, but to their dynamic relations whereby they found the properties and forms of bodies; and (2) that solidity, by its very nature, must be a product and not an original and changeless attribute. No atom can be regarded as having an absolute and changeless extension, but rather by its own energy it asserts for itself a certain position and volume, from which only a greater power can drive it. These simple facts serve to show that the chief qualities of bodies, which we may sum up under the term materiality, are products of the interactions of the elements, and not properties of the elements themselves.

The chief reason which remains for the corpuscular conception is that which originally produced it. This is not its scientific value, but its picturability. The atom as a dynamic element, or a centre of force, is as unpicturable as a soul. The imagination, therefore, is relieved if allowed to give it an extremely small but fixed form and volume. It seems easy then to tell what it is and where it is; while the dynamic conception is comparatively hard to realize; and withal the dynamic view seems so to dematerialize matter as to be scarcely distinguishable from idealism. These considerations more than anything else have kept the corpuscular conception from universal rejection. The general tendency of physics is towards the dynamic conception of the atom; but in sluggish minds the old view maintains a more or less undisturbed existence. The tendency towards dynamism is partly due to the general unwillingness to explain the same by the same, which is the case with the corpuscular theory; and partly due to the fact that the latter theory is involved in the gravest metaphysical difficulties. If the atom be real it must be an agent, and its properties must depend upon its agency. It must also be a unit. But in a previous chapter we have seen that the extended can-

not be a unit. An extended body is possible only as the parts cohere, and this, again, is possible only as they are connected by a system of attractive forces. In such a case, the atom appears as a system of attracting and repelling points, each of which is the centre of forces distinct from those of all the rest; and thus we should be led directly to the conception of centres of force. Possibly we might retain the indivisibility of the atom in such a case, but only by making the attractions greater than any possible dividing force. But even this very questionable notion would not save the unity of the atom. It would have a unitedness rather than a unity. Only that is a unit whose states are states of the entire being. Any conception of states which are states of parts only and not of the whole, as when atoms are conceived as having opposite forces at opposite ends, cancels the unity and with it the reality. But if matter be truly discrete it must be composed of true units. The notion of a composite without component units is like that of number without a unit. Nor does it avail to say that the units of composition are themselves composite; for this only postpones the problem without solving it. This reply may be allowed to a physicist or chemist who is pursuing only practical ends and does not wish to be bothered with metaphysical difficulties; and, indeed, it may be possible that the units of the physicist and chemist are only relatively such. We may conceive different orders of units, each of which may be the unit in a certain field; but none the less is it necessary from a theoretical standpoint to admit somewhere, as the reality of the whole, true units of being. But so long as a passive and extended solidity is viewed as an attribute of the elements, their unity cannot be maintained. We conclude, then, that the corpuscular conception, even in its modern form, must be abandoned (1) as unnecessary, and (2) as hostile to the unity, and hence to the reality of the atom itself. Either we must regard the atom as only a convenient practical fiction, or else we must view it as a true

agent, which, by its activity, founds without having the properties of phenomenal matter.

Is, then, the atom an unextended force-centre? This is not a necessary conclusion from the preceding argument. We need not refer to the view that things are not in space to find a third possibility. If we allow that the atom fills space, it is still possible to regard the filling as either static or dynamic. The former is untenable for the reasons given. The latter makes space-filling not a passive attribute of an inactive thing, but a result of atomic energy. By its repulsive force an atom is able to assert for itself a position and a volume in space; but this volume is no constant quantity, but varies with the intensity of the attack and the resistance. It is a product or an effect rather than an attribute. On this view the volume of an atom would be that space from which it excludes all others at any given moment. But if we accept this view, it would be necessary further to hold that within the space thus filled there is no distinction of parts, but that the atom must be all in every part. Its space-filling would not be the filling-out of a volume with a corresponding bulk, but it would be the presence of the entire atom in every point of the spatial volume. Without this assumption we should come into hopeless conflict with the unity of the atom. On the current theory of space we must either make the atom omnipresent in the little space to which its exclusive activity extends, or we must locate it at the geometric point at which the lines of force cross. The former view would modify some of our traditional conceptions of matter. In particular, incompressibility would no longer be a passive or an absolute attribute, and porosity and the void might be dispensed with. All of these are founded on the corpuscular conception, and are quite unnecessary on the theory in question. Even the theory which makes the atoms centres of force does not leave the space between absolutely void, for each atom extends its influence into that space so as to prevent entrance or passage. In this sense

the void disappears from the dynamic view. Some physicists have declared that the void between the atoms are as necessary to the theory as the atoms themselves; but this is true only for the corpuscular theory. It has also been objected that unextended atoms could never produce an extended body; but this overlooks the fact (1) that in any case the actual extension of body is due not to the extension of the elements, but to their repulsive forces, and (2) the unextended atom is assumed to have repulsive power extending beyond its own position. Upon our own view, as developed in the ontology, the atoms, if real, must be purely dynamic. The results reached in the discussion of space compel us further to deny that the atoms, if real, are in space. Their interrelations are dynamic only, but are such that bodies appear as having position and volume in space. In fact, the atoms are non-spatial, and the question as to their extension or non-extension disappears. It is needless to refer to the doctrine of vortex-rings, as that allows the atomic necessity and does not escape the atom itself. It makes the proximate units of the physicist vortex-rings in a perfect fluid, and deduces many interesting conclusions. But it fails to inquire into the nature of that perfect fluid, and so merely postpones the problem. But that fluid itself must have an atomic constitution to admit of the production of such vortex-rings as are imagined. Without this assumption, vortex-rings in pure space, or the rotation of parts of space, would be just as possible as vortex-rings in this fluid. While, then, we might by this theory explain the proximate units of physics, we should in no way escape the need of admitting ultimate units of being, or of admitting that the entire theory is only a formal fiction.

Since the earliest times a belief in the transmutation of matter has haunted the human mind. Are the atoms, then, all of a kind? The first effect of modern chemistry was to discredit such a notion. Over sixty classes of elements were discovered, none of which could be resolved into anything

else; and this fact seemed to put an end to all thought of transmutation. At the same time this fact did not prove that these classes were indivisible, but only that they are undivided. Moreover, some of these classes fall into groups, the members of which are closely allied in many of their properties; and this fact suggests some fundamental connection. The facts of isomerism and allotropism also are not without significance as showing how the same substance can have very different properties. The still more common fact that a slight change in the numerical ratio of the same elements results in the profoundest change of qualities has a similar bearing. Hence there has always been a kind of speculative unrest at this point; and the present mania for evolution, which refuses to accept anything as ready-made, has increased the dissatisfaction. But apart from the mania, the known facts make the thought possible, that the chemical classes are really varying systems of a common unit. This notion is possible; but if it were established as fact, the speculative advantage would be very small. The zeal with which at present experiments are made in this direction rests on several false assumptions. It is assumed (1) that the system would be more unitary if such a view were established, but this is a palpable mistake. Unity and all-alikeness are widely distinct notions. The true unity of the system consists in the unity of plan and principle, and not in the sameness of material. It is assumed (2) that such a view would greatly simplify the system; but this, too, is a mistake. To begin with, it would make the actual constancy of the chemical classes a great mystery, and their existence would be a greater still. That a given molecule should be as stable as the chemical elements, unless shut up by its nature to that combination, is highly improbable; but that a given unit should unite to form only a few classes whose members are exactly alike, is more astonishing still. To account for the fact, we should have to posit in the atoms a peculiar affinity for a few, and only a few, classes; and this

affinity must be made very strong to account for the stability through all the changes of matter. But such a supposition is not much simpler than the other, that the elements are qualitatively different. The only change from the current view would be in allowing the possibility that the same units might pass from class to class under the appropriate circumstances, whatever they might be. It must likewise be pointed out that every theory which attempts to deduce all qualitative difference from quantitative gives the spectator very great significance; for in such theories the world of qualitative distinctions must be referred to the observing mind.

The question whether the atoms are not all multiples of a common unit is quite different from another—namely, whether the atoms are not forms of a common substance. The attempts to answer this question in the affirmative are numberless, but they all rest upon a misleading imagination. In our own experience, we employ material for making many things, and the same stuff can be built into many forms. Thus the fancy arises that, perhaps, the atoms are little bits of a common substance. But this notion is a return to the exploded whim of pure being. Substance, we have seen, is not a stuff, but an indivisible agent. Hence it is impossible to view the atoms as built out of any pre-existing non-atomic stuff. Either we must view the atoms as strict units, or we must view them as elemental forms of activity on the part of the basal reality. In discussing the nature of the absolute, we pointed out the impossibility of deducing the atoms, by any apriori necessity, from the absolute. The necessary unity of every true agent, also, makes it impossible to view them as differentiations of the absolute. The one cannot split into the many, but the many, if real, must be viewed as created. Considered as proper agents, the atoms are no subjects of evolution, except as change is identified with evolution. The substantial cannot be evolved as to its existence. Considered as elementary forms of the activity of the infinite, they admit of evo-

lution in the sense that these forms may be conceived as taking on new features from time to time, according to the demands which the system makes upon them. Indeed, this conception would be necessary on this view. When a form of activity changes, it necessarily becomes something else. The attempts which have been made to reduce matter to a product of attractive and repulsive forces come to about the same thing. This thought is formally incomplete, as it gives no hint of the subject of these forces, or of what attracts and repels. Until this is done, the conception is empty of meaning. This subject, if not the elements themselves, must be something back of them, and thus the elements appear as unsubstantial forms of an activity not their own.

Leaving, for the present, the question whether the atoms are proper agents or only forms of the agency of the absolute, we pass to consider the forces of the atoms. In the chapter on being, we pointed out that force, as commonly conceived, as inhering in things, is purely an abstraction from certain forms of activity; we have now to attempt some nearer determination. The common conception is, that separate forces reside in the thing, and that the thing is the home or seat of the forces. But this view rests on the notion of pure being and on a hypostasis of force. The result is an impossible dualism, in which the being does not explain the force, and yet the force is nothing apart from the being. To this absurdity we are led by mistaking the distinctions of language for metaphysical facts. Scarcely better is the definition of force as the unknown cause of phenomena. This makes force at once a thing, for only things can be causes; and it also dispenses with everything but force, for the sole aim of speculation is, to find the causes of phenomena. But this view at once proceeds to stultify itself by next providing something else, which, in some mysterious way, possesses, or supports, or uses, the force. The

fact, however, is, that the elements are so related to one another that, when certain conditions are fulfilled, they manifest peculiar activities, which activities, however, are always the activities of the things themselves, and not of some inherent forces. Of course, they could not act as they do if they were not what they are; but the power to do what they do is developed in the moment of the action. We must here refer to our general conception of the system as composed of a set of things which mutually change as the plan of the system requires, so that each thing is what it is, and does what it does, because all the rest are what they are, and do what they do. In such a case, the being of everything changes from moment to moment, and its possibilities vary with it; indeed, its possibilities and its actualities are strictly identical. We do not conceive being, then, as having inherent forces, but as passing from one form of manifestation to another as its circumstances vary. We should say, then, that a new activity does not spring from an inherent power coiled up within it, but from a power acquired in the moment of manifestation. We may illustrate this by the intensity of attraction between two elements. At each new distance they attract with new intensities. These were not something in the thing, nor something put in the thing; they are developed at every point. Any given intensity represents the energy of action which the general relation between the two calls for at any given point. In the same manner, the different forces of things, as well as the different intensities of the same force, are acquired at the time of action, and represent only the forms of action which the nature of the system calls for in their special relations. But, since these activities fall into certain classes, we abstract a specific cause, which is not merely the thing, but some cause in the thing. This is a confusion of cause with ground. The cause of an act is the agent itself. The ground of the act is that peculiarity of nature which, under the fitting conditions, makes it the cause of that act,

and not of some other. We may say, then, that a thing is perpetually acquiring new forces and losing others, according as its relations change. The conditions of some of these manifestations may always be fulfilled, as in the case of gravitation. The conditions of some others may be fulfilled only here and there, and now and then. Such are the chemical, magnetic, and electric manifestations. Coexistence in the infinite seems enough to secure the first manifestation; the conditions of the others are far more complex. When we know the order of their appearance, we have their law to a certain extent. When, in addition, we know the law of their variation, which, in physical forces, is some function of the space between the interacting bodies, then we have a formula which can be used for mathematical deduction. It is this fact which constitutes the fruitfulness of the law of gravitation compared with the law of affinity or of cohesion. The former law admits of exact mathematical expression, and its conditions are simple; in particular, the mass admits of being treated as a unit located in a point. The problem of three bodies fails to give a hint of the unmanageable complexity of astronomical problems which would result if this were not the case. But the law and the circumstances being simple, and admitting of mathematical statement, they admit of deductive calculation. In the case of affinity, the circumstances are not so simple, and the law admits of no mathematical formulation, and here we are practically restricted to observation.

But, it will be asked, how can a thing acquire new powers? And how can we, with due regard to the indestructibility of force, speak of new forces springing up in things in new circumstances? To the first question we answer by confessing ignorance. How two elements which, at a given distance, attract with a certain intensity, should attract, at half the distance, with a fourfold intensity, no one knows, and yet we have to admit the fact. The attempt to represent it as due to the nature of space, whereby an outstream-

ing ether must vary in amount on any given surface inversely as the square of the distance from the centre is purely fanciful. The simple fact is, that the intensities of force vary with the space across which it acts, but no one has the least insight into the fact. And what is thus true of varying intensities is equally true of qualitative variation. They depend on the inter-relations of things, and when not manifested, are not existent. The other question, about the indestructibility of force, is an attempt to refer to the conservation of energy. The latter doctrine, however, assumes the laws of force and the mode of its variation, without any attempt to deduce them. Our conclusion, then, is, that force, as used in physical science, is only an abstraction from the various forms of atomic activity, and the laws of force are only the formulas which express the conditions of these forms of activity, and sometimes the rate of their variation.

From this standpoint we shall escape many difficulties which have infested the metaphysics of physics. All those difficulties connected with the inherence of force in the forceless, which arise when matter and force are held apart in mistaken abstraction, disappear of themselves. Force in itself is nothing; passive matter, in itself, is also nothing. The reality in this case, if anything, is a complex of agents in interaction; and matter and force, as commonly conceived, are but two unreal abstractions, which arise from separating the being and the activity. Many difficulties have also arisen from the fact that the same element has at the same time attractive and repulsive forces. No one, it is said, can properly conceive that the same atom, at the same time, attracts and repels another. To relieve this opposition, great efforts have been made to deduce attraction from repulsion, or repulsion from attraction, as a differential result, but without success. Prof. Bayma, in his "Molecular Mechanics," has sought to escape what he regards as an outright contradiction, by dividing the elements into two

classes, one of which is always and only attractive, while the other is always and only repulsive. The same attempt has been made in the doctrine which makes the ether-atoms repulsive and the ponderable atoms attractive; but this view is less consistent than the previous one, as it assumes, also, an attraction between the ponderable and imponderable atoms. In addition to this attraction, the facts of reflection in light and heat demand also a repulsion; and thus we are back in the old trouble. But, even among the attractive forces themselves, it is impossible to reach unity. Many physicists, distressed by the necessity of assuming a new force, with a new law for every peculiar set of phenomena, have sought to make at least all phenomena of attraction depend on one and the same law. And since, when we first make the acquaintance of the elements, they are, at least in our theories, under the influence of gravitation only, gravity has generally been chosen as the ultimate and only force, though others have not been without advocates. Saint-Simon and Fourier claimed to trace the law of gravity even into social relations; and there has been a very general demand among popular speculators that we regard affinity and the other molecular forces as transformed gravity. But none of these attempts have succeeded, and it is still necessary to assume new and peculiar molecular forces to explain the facts; nor is it likely that it will ever be otherwise. At the same time, it must be allowed that, on the popular view of inherent forces, this view cancels the unity of the atom, and brings the several laws of force into very uneasy relations.

These difficulties also disappear from our point of view. If the forces were absolute properties of the elements, it would be impossible to save the unity, and hence the reality, of the atom. But the forces of whatever kind are properties of the elements only in mutual relations, and are but expressions of those relations. If this be so, then it is conceivable that the relation between A and B should call for

attraction, while that between A and C should call for repulsion; just as the same person may be attractive to some and repulsive to others. In such a case the same thing would attract and repel, but the objects would be different. In this sense there is no contradiction in a thing's having attractive and repulsive forces at the same time. But when the interaction is between two elements only, the relation between them cannot at the same time call for attraction and repulsion. The notion that it can rests on the mistaken fancy that a thing is the seat of mutually independent forces, all of which work on their own account. It is possible that the analogy of the magnet may occur to us, and we may fancy that the atom might attract with one pole and repel with the other. But this notion would destroy the unity of the atom, and force us to abandon it altogether.

But the question arises, Do not the laws of attraction and repulsion themselves call for just this contradictory notion? They certainly would if they were taken absolutely; but the question suggests that the laws themselves are but results of a more general law, and are valid only within certain limits. If it be absurd to speak of an element as at once attracting and repelling another, then we must look upon both attraction and repulsion as the opposite manifestations at different points of a place-determining power. In that case the elements would attract and repel not absolutely and always, but now one and now the other, according to the demands which the system makes upon them, or according to the law for their total activity which the nature of the whole prescribes. The same conception, that the elements have not two coexistent forces of attraction and repulsion, emerges from the conclusions from the laws themselves when taken absolutely. The law of gravitation gives an infinite attraction for elements in contact. The laws of repulsion give an infinite repulsion in the same case. This result is not evaded by bringing in the consideration that the attraction varies also as the mass, for the notion of mass

has no application to the unit. But a result of this kind is at least highly paradoxical in that it endows every atom with a possibility of infinite attraction and repulsion—a notion which it is very hard to bring into harmony with the infinitesimal character of the atom. We escape these bizarre results by recognizing that the original force of matter is a place-determining one, which manifests itself now as attraction and now as repulsion, according to the demands of the whole. The mathematical formulas for attraction and repulsion, however, show no trace of the necessary limitations, and hence we may infer anything whatever which the formulas contain. Physical science is full of such abstractions. The first law of motion, and the separate independent forces in the atom are illustrations. These conclusions from the formulas of attraction and repulsion are like those from certain devices in mechanics, as where zero at the end of an infinite lever arm is shown to be able to support an infinite weight at the fulcrum. All such conclusions are the logical results of giving assumptions an extension beyond their original limitations. If, now, we wish to express the true law of the place-determining force of matter, it cannot be by double formulas of attraction and repulsion, both of which give paradoxical results as their limiting values, but by some formula, like that of Boscovich, which shall pass from attraction to repulsion according to the values of the distance. To this it has been objected that a simple variation of space cannot be the ground for a change in the quality of the force; but if space can affect action in any way, it might as well act qualitatively as quantitatively.

This result raises the further question, why force should vary with the space at all. On the theory which regards space as real and things as in it, this question is quite unanswerable. More or less of empty space does not seem, upon reflection, to contain the least ground for the variation of force. The idea attributes a kind of resistance to space, which must be overcome before the object can be reached.

And since, on the most realistic view, space does nothing, the existence of a thing in this or that point in space is no ground for change in the thing itself. Space-position, therefore, on any theory must be viewed not as a cause but an effect; it is the result of the interactions of things whereby they prescribe to one another the position they shall have in real or apparent space. But this place-determining power is a purely metaphysical one; it is not determined by position, but determines position. Its own determining ground must be sought for in the idea, or nature, of the whole, which is the ultimate source of all law and order. We cannot take any other view without either reasoning in a circle or making space an active thing. Hence it follows, as we have seen in discussing the nature of the infinite, that the whole cannot be construed as the result of its parts, but the parts can be understood only from the side of the whole. The parts are not independent seats of independent forces which by combination generate an apparent whole; but the parts have their existence and their properties, or forces, only as demanded by the meaning or nature of the whole. But though space itself can never be regarded as the real ground of force-variation, it may be treated as its measure in calculation, because the changing space-relations are accurate exponents of the changing metaphysical relations. Hence we can deal with the former with as much certainty as if they were the latter.

Nevertheless, the fancy is entertained by many that empty space itself is a sufficient reason for force-variation. Our physical experience teaches us that we can act directly only on things within reach; and even then we must not be at arm's length. This most vulgar fact seems to be at the bottom of our notion that force must vary with space. This fact is further aided by an alleged explanation drawn from the geometrical nature of space itself; and the result is a claim that all central forces must necessarily vary as the inverse square of the distance. The explanation and the claim

are totally baseless. They are founded on the notion that force is something streaming out from the element as a kind of aura flowing from a centre. If this view were allowed, there would be a certain explanation both of the diminution of force with the space and of the law of the inverse square. For as the surface of a sphere varies as the square of the radius, it follows that with twice the radius the surface would be four times as great. Hence the outflowing aura would be distributed over a fourfold surface, and hence, again, it would only be one fourth as intense on the unit of surface. But we are freed from this notion, which is plainly only a product of the imagination. Nothing streams out from being; and force is only an abstraction from a thing's activity, and never a thing itself. But the imagination always wants a bridge on which to cross; and hence it forms the notion of a passing and repassing thing, and thus exchanges the notion of force acting at a distance for the old view of action by impact. But if the passing force be a real something, we must know where it comes from, and how the atom can forever generate this reality so as to fill space with it. If the force be only an influence, then we have simply a figure of speech as the cause of effects. But if the force were allowed to be a real something, which passes from thing to thing and produces effects, our difficulties would be greater than ever. An outgoing ether would not explain attraction; and if it did, it ought to be as attractive on the farther as on the nearer side of the body to be moved. No body cuts off the influence of gravitation by interposition; and hence the force which reaching the earth from the sun attracts it towards the sun, forthwith emerges on the other side, and ought to attract it from the sun. There seems also to be no reason why the force should attract in the line of its own motion rather than in any other. This theory does not conceive force as a tense cord, but as a moving something; and hence when it reaches a body and causes motion, that motion might be

in any direction. Some have sought to escape these whimsical difficulties by the additional fancy that a resting sphere of force is encamped around every atom; but this view disposes entirely of the attempt to deduce the law of force-variation from the nature of space, as that rests on the assumption of movement from a centre. This attempt is further forbidden by the fact that, if space be the real ground of variation, there can be only one law of variation, as space is always and everywhere the same. And if only one law, then there can be only one, or no force in the system. For if there were both attraction and repulsion, and they were balanced at one point, they would be balanced at all points, and would cancel each other. If, on the other hand, one were stronger than the other at one point, it would be so at all points, and would banish the other.

But it is needless to pursue these whimseys further. Our definition of force excludes them. Physical force, expressing as it does only a relation between objects, is necessarily linear so far as it is related to space at all. And if these linear relations exist on all sides of a thing, it is not due to a sphere of force encamped about it, but to the existence of things on every side. The elements attract one another, and not the void. The void itself is neither attracted nor filled with attractions. All the most determined realist can claim is, that if a new body were posited in the void, it would be attracted by other related bodies. But these attractions, for all we know, may vary according to any law of the distance whatever. They might vary directly as well as inversely as the distance; and, as Herbart has pointed out, the direct first power seems most rational of all. We might say, with some show of reason, that the intensity of an attraction ought to diminish in the measure in which it is gratified. This is the fact in most cases of human desire, and with such forces as elasticity and affinity. The chemical notion of saturation or of satisfied affinity is an illustration. But there seems to be a kind of miserly greed in at-

traction, which grows more intense with its gratification. In truth, the actual law is always to be determined by observation. Newton had not attained to the insight of some speculators, and hence when observation did not tally with his calculations, based on the law of the inverse square, he laid them aside; whereas, if he had only known that force must vary as the law of the inverse square, he might have defied the observations. No more did the succeeding generation of astronomers and mathematicians regard the law as a necessary one; and when the theory of the moon, based on gravitation, began to vary from the facts, they began to doubt the law until further observation and calculation removed the discrepancy. In addition to this fact, it is found strictly impossible to deal with molecular phenomena on the theory that the force varies as the inverse square. So, then, we have the fact that the law of the inverse square is no necessity of thought, and is not the law of all central forces. It is universal neither in thought nor fact. All that can be said of it is, that it is better adapted to a system like ours than any other law. Most other laws would be incompatible with the stability of the system; and all would result in profound modifications of the actual order. From our theistic standpoint we find the reason of the law in purpose. If one is not content to accept this teleological view, the law must be accepted simply as an opaque fact.

Physical forces, in general, vary only with the space, and not with time, or velocity, or mode of aggregation. This fact also admits of no deduction. The notion of a periodicity of force is entirely possible, especially as it is given in our own experience. Human energy is highly periodic, varying with the short period of day and night, and with the longer period of youth and old-age. The conception of the atoms as never wearying, but ceaselessly adequate to the demands made upon them, is almost a distressing one. The notion that force should vary with velocity is likewise possible. When forces vary only with the distance any change

of place demands a new intensity of action, and the change must be instantaneous. An atom at a given point must have the attraction proper to that point, no matter whether it be at rest or in the most rapid motion. But change of place is incessant in the system, and withal the velocity of movement is often immense. Every atom, then, must instantaneously adjust itself to the new relative position of every other in the universe, and this it must do incessantly and forever. This view implies the instantaneous transmission of force, as far as the transmission of force has any meaning. If time were required for passage, moving bodies would not respond to every other with the exact intensity which its position demands. In fact, however, there is no passage. All things are embraced in the infinite; and a state of one is at once a state of the whole.

That the elements should acquire new forces from aggregation is also a possible thought. In that case the elements taken individually would not explain the aggregate; for the properties of the elements would be due to the aggregate. That this is no impossibility is shown in human experience. Society cannot be explained as simply a collection of independent units; but the individual has properties as a member of society which he does not have in himself. The variation of force only with the space is no necessity of thought, and is antecedently improbable unless we assume that the system has some end to realize which would conflict with any other law. The facts in the case can be determined only by induction; and even that cannot attain to universality. If we should find the laws all of a kind at present, we could only conclude that the system has entered upon a period of uniformity and stability; but not that it always has been, or will be, the same. All the laws of force, of whatever kind, and all their consequences, such as the laws of motion and the conservation of energy, must be admitted as simple facts within the range of observation, or else referred to purpose as their ultimate ground.

In speaking of space as a ground of force-variation we denied that it can be such ground. But may it not make all action at a distance impossible. If related to force at all, it seems better able to bar its action than anything else. This has long been a vexed question, almost a black beast, in physical speculation; and certainly on the received theory which locates individual atoms in a real and empty space, it is a rather tough problem. If we conceive a multitude of individual atoms separated from one another by an absolute void it is utterly impossible to bridge over the abyss between them by anything but a pre-established harmony; and this would only simulate action at a distance. The void would imply and express the absence of all essential relation. Newton, therefore, in his letter to Bentley, insisted that no one with a moderate reflective power could imagine that the gravitation of the elements is due to any action of the atoms themselves. And, indeed, it does seem incredible that the infinitesimal atom is really filling space with its influence to the farthest atom of ether or star-dust, and yet without any knowledge of itself, or its fellows, or the spaces across which it acts, and yet adjusting itself absolutely, instantaneously, and incessantly, to each minutest change of distance, in not only one but all the atoms of the system. Accordingly, there has always been with physicists an anxiety to fill up the void with something through which action should be transmitted, and the result has been the invention of a more or less numerous family of ethers. This anxiety, however, rests upon the notion that action is more intelligible when between contiguous things than when between things separate in space. But we have seen, in discussing interaction, that contiguity in space does not remove the difficulty of interaction, as this lies in the opposition of the notions of independence and community; so that not action at a distance, but action at all between two things assumed to be independent, is what reason finds so difficult. The attempt to dispense with action at a distance must really deny

all attractive and repulsive forces to the elements, and either appeal at once to a co-ordinating and moving force in matter which is not of matter, or it must reduce all material action to impact.

The latter alternative has often been chosen by physicists. When the dynamic view of matter was first proposed, the general objection to it was that it was a return to the scholastic doctrine of occult qualities. The present conception, which endows matter with moving forces, was for a long time resisted on this ground, and the demand was made that all material phenomena be explained by the laws of motion and impact. The same unrest with the mysterious implications of gravity often reappears in attempts to explain gravitation by the impact of some assumed ether-atoms. To begin with, these attempts are all utter failures. The phenomena of cohesion and affinity utterly defy any attempt to explain them as the results of impact; while the implications of the impact theory are without a shadow of warrant. But, in the next place, impact is far from being so simple as this theory assumes. On the ordinary theory, there is no contact whatever of the elements, and they are held apart by repulsive forces of such a kind that only an infinite force could bring the elements in contact. On this theory, then, impact itself assumes action at a distance. And, in general, if force acts at all between the atoms, it must act at a distance. An attractive force which did not act at a distance could never make itself known as attraction; and a repulsive force which did not act at a distance would not be repulsion at all. To see this, conceive two solid cubes endowed with repulsion which, however, cannot act at a distance. If these cubes occupied the same space, their repulsions could not result in motion, no matter how intense they might be, because they would be balanced in every direction. If now they be pressed together, there is not the slightest reason why they should not telescope each other. In the first place, such bodies would meet only in the geo-

metrical plane which separates them, and all the resistance to interpenetration must lie in that plane. But the plane itself is nothing but an imaginary surface without resistance; and hence the resistance must come from the parts on either side of the plane. If, however, we should allow that each body has a certain part of itself in the plane, then those parts which are in the plane would strictly coincide, and, as coinciding, there would be no reason why the repulsion between these parts should take one direction rather than another; and it would practically be cancelled, so that the true repulsion would still lie between those parts on either side of the plane and external to each other. But as by hypothesis these parts cannot repel because at a distance, there is nothing to hinder the two bodies from sliding together under pressure. This result would be reached even if we should allow the atoms to be solid and in absolute contact. We should still have to posit action at a distance. But, as we have frequently seen, there is no reason for supposing that atoms are solid; they are rather the immaterial ground of phenomenal solidity. So, then, we seem shut up to affirm action at a distance.

But here a new difficulty emerges. If we allow the general possibility of action at a distance, we seem likewise shut up to the paradoxical admission that there is no longer any reason for believing that a thing is in one place rather than in another. How do we know that the things which, by resisting our effort and coercing our sensations, create in us the perception of a world about us are not really located beyond the bounds of our solar system? Crude common-sense, of course, would reply that it is directly cognizant of the very being and location of things; but every one competent to speculate at all knows better. He knows that we cognize things only through their activities upon us, and that if these activities were maintained, our world-vision would remain unaltered, no matter what happened to the things. But since action may take place at a distance, why

may not the things which act upon us be located at any point whatever in space? And since, in the popular theory at least, the void is no bar to action, why may not things be in some extra-siderial region, and only manifest themselves in our neighborhood? If it be said that existence in space means only that a thing acts at a certain point, common-sense is disturbed, for it thinks it means more than this by existence in space, and in addition the difficulty is not removed; for if a thing exists in space at all, then, on the hypothesis of action at a distance, the fact of action at a point does not prove that a thing is there. Moreover, the atom acts at many points; is it in all of them? By our unfortunate admission of action at a distance, we have deprived ourselves of every valid test of the true whereabouts of things. We may fancy that in resistance we have such a test, but this too is untenable. Both attraction and resistance may point to a certain centre, but this is far from proving that the agent is really there; for since action may take place at a distance, it is quite possible to view the point as the radiating centre of atomic manifestation only. The claim that the atom must be at the crossing of the lines of attraction and repulsion depends on an assumption which is not self-evident. This assumption is that an atom can cause another to move only on the line which joins them; but, on the hypothesis of action at a distance, it is especially hard to see why the movement might not take place on any other line whatever. Of course, attraction means a drawing-to; but etymology will not help us in this matter. If, then, action at a distance be allowed, it is theoretically possible to claim that, for all we know, the real agents of the system are removed from it by the whole diameter of space. But this is so revolting a paradox that it would hardly seem more irrational to claim that things may act in some other time than the present. Besides, on this admission, the bottom would fall out of the atomic theory itself. The great reason for admitting separate atoms is the desire to locate

an agent at the centre of attractions and repulsions; if we locate the agent elsewhere, the only theory which would be satisfactory in any way would be one which allowed one and the same agent to do all the work. To complete the paradox, we must add that if we insist that a thing is wherever it acts, then we have to attribute a kind of omnipresence to every atom; as every atom is said to attract every other, that is, to act upon every other. This view would be embarrassing enough. It would lead at once to the previous conclusion, that there is no warrant for saying that the atom is in one place rather than in another. It would, indeed, be in every place and everywhere as one and the same atom. Thus we should have a very peculiar kind and case of omnipresence.

These bizarre difficulties arise mainly from the attempt to construct a system out of atoms and the void alone. Every such attempt shatters on these and similar absurdities; and it is hard to escape all of them on any theory which allows the substantive reality of space. In our own theory we escape the general difficulty of action at a distance by denying the independence of the atoms. There is, then, no void between the atoms across which action must travel; but a state of any atom is at once a state of the whole, and thus of all the other atoms. Thus there is no void to cross, but all things are comprised in the unity of the infinite. But we cannot stop here. In particular, when this view is combined with the ideal theory of space, it becomes impossible to maintain the atomic theory in its current form. The spatial discreteness and picturability of the atoms disappear entirely, and with them disappear also the chief reasons for viewing the atoms as ontological facts. It becomes far more simple to view the so-called atomic activities as simply the discrete activities of the one than to posit a multitude of agents, which are not agents after all. For, as we pointed out in treating of change, the notion of impersonal being in general is simply process; and as we pointed out in discus-

sing interaction, the notion of impersonal dependent being is identical with a flowing activity of the independent. Such being would not fill out the notion of existence. We hold, then, that substantive existence cannot be ascribed to the atoms. They must be viewed as elementary forms of the infinite's action; and they owe their substantive character solely to the fact that we think under the forms of substance and attribute. But to regard them as true things is only an embarrassment without any compensating advantages. We decide, therefore, in place of the substantive atoms, to posit a series of related elementary activities in the infinite such that they produce for us the appearance of a world of things spatially discrete. On this view all questions about the unity, indivisibility, and indestructibility of the atom disappear. These activities are all conditioned in their nature and inter-relations by the plan and nature of the whole. They are constant if the plan requires constancy, and otherwise not. If the plan call for progress, these activities may pass from lower to higher forms, so that what we call the atoms may themselves undergo development. Their existence and nature being contingent upon the world-plan, it is entirely possible that they may lose existence or change character completely as the plan unfolds. These activities may also be so correlated that certain activities shall be replaced by certain others entirely different. Indeed, the atom as a form of activity has no identity whatever. It may be a constant reproduction of the same form, and it may vary in intensity and character; but in either case the fact will be determined by the demands of the system. Physical phenomena on this view are no longer referable to the atoms as their substantial ground, but to the agency of the infinite. At the same time, the atomic theory retains its full value as an instrument of research and as a means of representing the facts to the imagination. As thus used, it is a most fruitful device, like the decomposition of forces in mechanics. Mechanics could not get along without a set of formal

devices such as the decomposition and recomposition of forces, or the representation of force by certain functions of the space and time or of velocity and time; and yet these are generally only logical devices for the purpose of making the problem amenable to our calculus. But the practical value of these conceptions misleads no one into overlooking their purely formal character. The actual force is not compounded of three rectilinear components; and force itself is forever different from lines and from the second differential coefficient of the space referred to the time. If, then, the atomic theory were rejected entirely, its practical and methodological value would still remain. But there is no need to regard the theory as a mere device of method. The phenomena of body cannot be explained as the outcome of a single and simple act. On the contrary, there are opposition and union throughout the mass. If, then, we deny the ontological character of the atoms, we must allow that, as elementary acts of the infinite, they are diverse and manifold. Hence the atomic theory, while it does not represent the substantial fact, does represent the form of the total activity by which the phenomena are produced. We may, then, resume it with perfect confidence, guarding ourselves only against mistaking the form of the activity for its ultimate causal ground.

CHAPTER V.

THE COSMOS AS MECHANISM.

THERE is an outstanding debate in human thought which, in one form or another, reaches back to the dawn of scientific speculation. This debate is upon the question whether nature is a mechanism or an organism. The necessity of the organic conception has been vehemently affirmed by the majority of speculative philosophers, while the mechanical doctrine has been as vehemently affirmed by physical science. The successes of the latter on the basis of the mechanical conception have won for this view almost universal recognition. Our aim is to get some insight into the merits of the dispute, and to reach a corresponding decision.

As is so often the case in such debates, neither of the opposing views is clearly conceived. The organic theory has so little positive content as to be scarcely more than a denial of the mechanical view; while the latter has been so variously held as to be identified at one time with the corpuscular philosophy and materialism, while at others it expresses only a mode of working, and sometimes only a principle of method, like the devices of mathematics. In the first case it is ontological, and claims to know and name the cause of phenomena. In the second case it is purely phenomenal, describing the form of causal activity, but saying nothing of the cause itself. In this form it often identifies itself with positivism, and protests that it knows of nothing but phenomena and their laws. In the third case the theory is one of the many formal devices of thought which

have no significance beyond their formal value or convenience. It is plain that no decision can be reached while the opposing views remain in this nebulous condition. It is always possible to shift position according to the state of the dispute, and the debate becomes a war of words. In the various discussions of this subject this possibility has been abundantly realized.

The organic theory is little more than an expression of the demand for unity in nature. Its defenders rightly hold that a system cannot be constructed out of independent and unrelated parts. They demand, therefore, that the whole must precede and determine its parts. The mechanical theory, on the other hand, insists on explaining the whole as the sum or outcome of the parts. But the demands of the organic theory, which in themselves are justified, have been met in a very awkward manner. Nature has been hypostasized into a mysterious unity, and made the subject of all movement and harmony in the system. Aided by capitals and italics, this abstraction has not failed to shed the utmost light on all problems. In the place of a mechanism which necessarily produces natural phenomena, some have posited an unconscious intelligence, or a mysterious instinct. Others have spoken much of a controlling idea which rules in nature, and prescribes to all the parts what they shall be and do. The aim in these theories is to posit something between the conscious intelligence of God and a blind and necessary mechanism. But the attempt is a failure. An unconscious intelligence is a pure contradiction. That which is unconscious cannot be intelligent, and that which is intelligent cannot be unconscious. A mysterious instinct, also, is a phrase empty of the slightest positive content; and the explanation of a fact by instinct is to abandon explanation while pretending to give it. Finally, a controlling idea has no meaning except as a thought in the consciousness of some person who governs himself accordingly. When this conscious agent is not given, the notion is a pure vacuum,

and the controlling idea must be replaced by a mechanism of such a kind as to work in a certain way. Mind and mechanism are clear conceptions. The former governs itself by preconceived laws, the latter is driven from behind. In the former an effect is the outcome of purpose, in the latter it is the necessary result of its antecedents. No third view is possible except as something purely negative. The only means of uniting the two views is in the conception of final cause. In this case the mechanism is determined according to the idea, and the idea is realized only through the mechanism. It is only as a doctrine of final cause that the organic theory has any clear or tenable meaning. The unconscious intelligence of nature then becomes the conscious intelligence of the creator; and the controlling idea is not the hypostasis of an abstraction, but the rule or plan according to which the creator proceeds. As thus conceived, the organic theory demands the mechanical theory as its supplement. Their relation becomes that of final and efficient cause, and each demands the other.

Historically, the mechanical theory has undergone various changes, all of which, however, have left their traces in the current conception. Prof. Harms, in Karsten's "Encyclopedie der Physik," insists that a purely mechanical theory of things is found only in the Greek atomism, which, without appealing to moving forces or occult qualities of any kind, sought to construe the system from atoms and the void alone. Descartes went even further, and rejected the Greek conception as not purely mechanical. This he did partly on the ground that the Greeks assumed the void as real, and partly because they posited weight as a property of the atoms. The reality of the void he denied as absurd, and the assumption of weight he regarded as a return to the dreary waste of occult qualities. For him the essence of matter was extension, and for him the mechanical theory implied that all heterogeneity of quantity and quality in the material world can be explained as modifications of the one

homogeneous property of extension. Any theory which came short of this simplicity was in so far a departure from the mechanical view. Accordingly the dynamic conception of matter was for a long time resisted as not mechanical. Matter, it was held, can act only by impact; and any other theory was rejected as a return to occult qualities. In this view that alone is a mechanical explanation which refers a phenomenon to a combination of particles whose essence is extension, and which act only by impact. Extension, solidity, motion, and impact are viewed as self-sufficient ideas, and as the only outfit demanded by the mechanical philosophy. Hence, in the Cartesian philosophy, all dynamic theories of matter are opposed to mechanism; and the antithesis of mechanism is not organism, but dynamism.

Nevertheless, the mechanical theory is by no means identical in the minds of its holders with either Cartesianism or corpuscular atomism. And yet traces are not lacking of the feeling that a pure mechanism ought not to appeal to other notions than those mentioned. Still, the holders of this view make the freest use of the notion of moving forces; and it is chiefly in occasional attempts to explain these forces as the result of pressure or of impact that the inner unrest appears. But the moving forces assumed are made as colorless as possible; and thus the mechanical theory becomes about identical with theoretical mechanics. In this science, we have the three factors of matter, force, and motion to determine their mutual relations. Here, too, all qualitative differences are ignored. Matter is simply a rigid mass or an aggregate of rigid atoms. Force is viewed simply as causing or retarding motion. All is quantity in the theory; and quality is dealt with only as it can be transformed into quantity. The system thus reached differs from the corpuscular theory only in the conception of moving forces; but these are so colorless as not to change the appearance of the whole. Both views are equally monotonous. All that is possible in either is a redistribution of

matter according to the laws of motion. This is produced in one case by the atoms knocking against one another; in the other case the atoms pull or push one another; but in both cases the process is a perfect monotone. Accordingly a mechanical system is often said to be one in which there is nothing but a redistribution of matter and motion; and the claim that the system is mechanical is understood to mean that everything can be explained in terms of matter and motion; and matter is conceived as essentially the same in all its combinations. This is, perhaps, the popular conception of the mechanical theory; and in this form it is identical with the crudest materialism.

But there is another conception of the mechanical theory, according to which it has no essential connection with materialism, and is not limited to physical phenomena. This new view assumes the system to exist, but how or why it does not pretend to tell. It further assumes that in the ongoings of this system there are fixed, general laws; but what these laws are is to be learned only from experience. With these assumptions it aims to show how any given state of things follows from the preceding state of things according to the laws which rule the succession. It demands, therefore, that every event be connected with its antecedents by fixed law, and it aims to comprehend every event as the necessary outcome of its antecedents under the system of law. Again, if any object whatever be complex, the theory aims to understand it as the outcome of its components, which are also supposed to unite according to fixed laws. This part of the theory applies to coexistences as the former applies to sequences. To understand the coexistent whole, the theory resolves it into its parts; and to reach the whole, it constructs it out of its parts. The properties of the mass are deduced from the properties of the elements. The properties of the compound of whatever kind are referred to those of the components. This part of the theory takes the direction of atomism in physical science, and of

analysis everywhere. This analysis is then succeeded by a synthesis in order to show how the compound result flows from the factors which compose it. The essential idea of the theory, then, is that composition and succession in the system take place according to fixed laws, and that when the components and the laws are known, the result may be logically deduced.

With this understanding, the field of mechanism is greatly enlarged; for wherever there is combination of factors according to any law whatever, there is mechanism. We can carry the notion with perfect propriety into psychology and into society. For a complex mental state owes its character to the simple elements which compose it; and these unite according to fixed mental laws. In like manner mental states succeed one another according to fixed laws, so that, freedom apart, any given state can be understood as the outcome of its antecedents. Likewise a complex social effect must be viewed as the resultant of the manifold factors which enter into it, or precede it. We may then rightly speak of a mental mechanism, according to which given mental antecedents have corresponding consequents, and according to which the components of a complex mental state are all represented in the outcome. When, in dreams or reverie, the will is withdrawn from intellection, the succession and combination of ideas are doubtless strictly determined by the primary laws of mental action; so that if we knew the circumstances and the laws we could predict the outcome with perfect certainty. With equal propriety we may speak of a social mechanism; for in society, also, the simple explains the complex, and the past explains the present; and both the combination and the succession are determined by law. Nowhere can this notion of a fixed order be dispensed with. In speaking of interaction, we pointed out that the notion of a system implies an adjustment of its members such that a given state of one implies in the others a state definite in kind and degree; and such a given state

of things can be followed by only one consequent. Without this assumption like causes would have unlike effects; and we should be put to permanent and utter mental confusion. And not only is the assumption of fixed laws for all combination and succession necessary to thought, but we also depend upon it in practice. Our efforts at education rest upon this conception. We assume that there are fixed laws in mind, of which we must avail ourselves to reach our end. Again, in our efforts at self-government we make the same assumption. Our freedom does not extend to a control of these mental laws, but only to their use. The highest illustration of this fixed order is found in reason itself. Here all synthesis of ideas and all movement of rational thought rest on fixed laws, and are impossible otherwise. In a previous chapter we pointed out that these laws cannot dispense with freedom; here we point out that freedom cannot dispense with these laws as the fixed factors in all rational operations. Without a foundation of uniformity, freedom would be worthless, if not impossible. In this most general sense of fixed laws, determining all combination and succession, mechanism is an integral part of the notion of any and every system.

The necessity of the mechanical theory as a principle of method is further seen by observing the nature of scientific explanation. Explanation, in general, may be metaphysical, teleological, and scientific. A metaphysical explanation consists in referring things and events to their ontological causes. A teleological explanation consists in giving the purpose of things and their activities; and a scientific explanation consists in showing how a given state of things results from an antecedent state of things according to certain general laws; or how the properties of a compound depend on those of its components. The scientific explanation, then, assumes the system and its laws, and makes no attempt to tell how these are possible, or for what purpose they exist. It only aims to show how within this system

one state of things results from another state of things, and how certain factors combine to produce certain results. And when any given state of things, whether in mind, or matter, or society, is connected with the antecedent state of things according to some general law, it is regarded as explained. The theory, then, says nothing about the causes at work, but only describes the order and the laws of change which some cause or causes produce and maintain.

In this sense, the mechanical theory is simply a principle of method. It commands us, first, to analyze every compound into its factors, and then, by a synthesis of the factors, to construct their resultant. This principle is by no means limited to physics, but is universal in its application. It is as valid in psychology, sociology, and philosophical history as in the sciences of matter. Social science and philosophical history, especially, owe all their progress to the use of this method. Neither was possible until the idea of a fixed order in the combinations and succession of events was introduced, and until men began to look for the causes of political and social events in the nature of their antecedents, or in the nature of their component elements. And this brings us again to the notion of a social mechanism, in which effects result from the fixed nature of things with the same necessity as in the outer world. Even in mind and society, as well as in the physical realm, freedom cannot modify these laws; it can only use them. Thus, in society, it is possible for men to do or not to do, but the consequences are beyond volition. The moment an act is performed, it enters into the great web of law and causation, and escapes from any direct control by volition. To change the result, freedom must call in some other law, and thus, by pitting law against law, gain the desired end. Legislators may make laws, but they cannot legislate their effects. Mistaken laws lead to mischief, and wise laws lead to good, but in both cases the effect is due to the mechanism of society and of human nature. With a knowledge of

this fixed order, the historian can trace interaction where the annalist finds only coexistence, and cause and effect where the annalist finds only sequence. In this way history and legislation become sciences. In general, then, the scientific explanation of any event consists in connecting it with its antecedents, according to those laws which determine the succession; and the explanation of any compound consists in referring it to its components. And the rule of procedure is, (1) to analyze the thing or event into its ultimate factors; (2) to look for the laws which govern the combination or succession; and, (3), by synthesis of the factors according to the laws, to construct the thing or event as their resultant. The gist of the explanation consists in this synthesis; the other operations are but preliminary. When this synthesis or deduction is impossible, there can be no scientific or mechanical explanation. In such cases the facts may be known as facts, and may be referred to a cause, but, as not flowing from the antecedents, they lie beyond properly scientific explanation.

From this exposition of the mechanical theory, it is plain that it expresses a just demand of intelligence. The mind demands continuity and law in the system. A system in which the present had only a temporal relation to the past could never be the work of a self-respecting intelligence. It would be simply an arbitrary and disconnected doing and undoing. Equally absurd would be a system in which there should be no established order of procedure. In that case, anything might be followed by everything, and like causes might have unlike effects. This element of law determining combination and interaction is very much more important than the element of continuity. The latter, as we shall see, is far from universal, but the former admits of no exception. It is this element alone which makes reason possible, or which fits the physical system to be the instrument of intelligence. If there were no fixed modes of working in the universe, complete and hopeless confusion would re-

sult, both in the outer and in the inner world. In addition to these features, the mechanical theory further rests upon the mental demand to know how any given event has been brought about. We have insisted that the demand for a final cause is justified, but this is only one side of the matter. If all the features of the system could be shown to be implications of some eternal idea, we should still have no knowledge of how this logical system is set in reality, so as to meet the demands of the idea. The idea itself is simply a thought; and if it is to be realized, its logical implications must be replaced by a dynamic system of things interacting according to general laws. That is, the idea must pass over from final to efficient cause.

From the preceding exposition, the limits of the mechanical theory are also plain. Mechanism can never explain itself. It assumes the system and its laws, and only aims to discover the inter-connection of phenomena within the system. Thus, in astronomy, it assumes gravity and its law. These are simple facts which must be recognized, but cannot be deduced or comprehended. But, assuming them to be facts, it is possible to deduce a great variety of consequences, and especially to exhibit any position of the planets, as the result of their preceding positions. The same is true in every application of the theory. Certain elementary laws of action are assumed or discovered, and then all complex results are exhibited as their outcome under the specific circumstances. These factors of the process can never be explained by the process. They found the theory as its postulates, and only an inverted intelligence would hope to explain them by their results. They are the alphabet, or type, of the process, and, as such, cannot be explained by it any more than letters can be explained by their collocation. The alphabet is the condition of written words, and we explain all words by decomposing them into the letters, but with the letters decomposition and explanation cease. So, also, in mechanical explanation, we cannot go on forever,

but must at last come down to some fact or facts which cannot be further explained. In theoretical mechanics, we stop with motions in a straight line and with linear forces. These we make no attempt to deduce or explain, but use them as our alphabet for spelling out the complex words and sentences found in the motions of the external world. In physics and chemistry, again, we stop with the atoms and molecules. Physics has not the task of accounting for these, but only, by means of these, to account for masses and their properties. Likewise, in psychology, we have to assume sensation and the elementary laws of mental action. Explanation does not apply to these; but, by means of them, the psychologist seeks to account for the complex forms of the mental life. This fact, that mechanism cannot explain itself, is often overlooked by disciples of the mechanical theory. Hence arise the attempts to explain the system and its laws as the result of its own processes. A mania for analysis and explanation often seizes the speculator, which results in the demand that all the definite laws and forms of existence be deduced from some antecedent state of lawless indefiniteness. The inverted and absurd nature of this procedure is evident. It is inverted, because it seeks to comprehend the system as the result of its own processes; and it is absurd, because it seeks to deduce the definite from the indefinite, and law from the lawless. It is, indeed, possible that a given law may be the result of some deeper law, but this bare possibility can never justify us in going behind any law, unless we find in the facts themselves a summons to carry our analysis and regress still further. But, if this were the case, we should still have to assume fixed laws of some kind as the postulates of our procedure, and hence as lying beyond mechanical explanation. Hence there will always be, in the mechanical theory, certain data which cannot be deduced. Analysis cannot analyze something into nothing, and synthesis cannot build something out of nothing. And these data, as the postulates of mechanical neces-

sity, will always lie beyond it; for mechanical necessity is always hypothetical. The conclusions deduced are necessary only on the assumed reality of the factors or forces which enter into the combination. To violate mechanical necessity, it would be necessary to cause the same forces to have different resultants, yet without changing the forces themselves. But a modification of the resultant, by modifying the forces, or by introducing some new force, is possible, without in any way affecting the laws which determine the combination. Thus mechanical necessity appears as something secondary and derived. It does not penetrate into the ontological realm, where power has its seat, but represents only the form and laws of an interaction which cannot be mechanically constructed, because it founds mechanism. The attempt to explain everything mechanically leads not merely to the difficulties of an infinite regress, but is really an attempt to explain something by nothing. Unfortunately, this extravagance is not unknown in the history of speculation.

The mechanical theory, then, is limited, on the one hand, by the necessity of assuming the system with its fundamental phenomena and laws. That it cannot collide with teleology is almost self-evident. Its explanations consist entirely in showing how an effect has been reached; and they leave every one free to believe that there is purpose in the process. The theory has the further advantage for the teleologist that it excludes the fancy common with weak or untrained minds, that an essentially lawless or chaotic system could of itself evolve order and law. The mechanical system is definite from the start; and, unless interfered with, its entire future is contained in the first moment. It can never give itself any determinations which have not been implicit in it from the beginning. Hence the attempt to give a mechanical explanation of a teleological problem always consists in positing a set of agents or conditions of such a kind and in such relations that they must bring about the

result in question. That this is a postponement, not a solution, of the problem is evident.

The mechanical theory meets a further limitation in the appearance of any new law, and in the intervention of freedom. If we conceive the elements moving under the influence of gravity alone, we can deduce their future from their present, as long as no new law or force appears. But in the course of their interaction, suddenly a new form of activity, as the chemical, begins. This new form cannot be deduced from the preceding state of the system as a rational consequence, and must be viewed as the manifestation of a new force or law. Up to a certain point the new force would be unmanifested; and when it appeared, it would not be a consequence of previously known laws, but as a new manifestation of the inner nature of the elements. In that case the elements themselves would undergo an essential qualitative change; and while the laws of combination would remain the same, the forces which enter into combination would be entirely different. We may say that if we knew the complete law of the elements, we could, even in this case, deduce the new order from the old; but this is scarcely more than to say that if we knew what the elements would do, we could tell what they would do. If it is to be more than this barren tautology, we must claim that the complete law of the elements is not fully manifested at all times; and we must also allow that the manifestation of this law is such as to produce faults in the phenomenal order; that is, to produce changes which a study of the previous phenomena would not have revealed. But it is plain that in making this claim we abandon our original aim, which was to connect one state of things with the antecedent state of things according to laws learned from observation. In place of this claim, based on experience, we substitute another, based on a speculative assumption. It is no longer the laws we know which enable us to deduce the present from the past, but laws which we assume we might know if we had suffi-

cient insight. Thus we assume a kind of ontological mechanics back of the phenomenal mechanics, and one also which is not strictly continuous in its phenomenal manifestation. The difficulties of this notion have led many to claim that the elements have but one law, and that all the complicated forms of their activity are results of that law. But the attempt to deduce all phenomena from their antecedents according to one law has never succeeded; and various laws have still to be accepted as facts which admit of no explanation.

The disciples of the mechanical theory have been still more restive with reference to the intervention of freedom in the system, so as to produce results which otherwise were not there. Part of this restiveness has an irreligious root, and as such has no philosophical significance. So far as it has a rational basis, it consists in appealing to the law of continuity, or in declaring that such results admit of no scientific explanation. But here we must remind ourselves that the law of continuity as thus used is a self-evident axiom only on the atheistic assumption of the self-sufficiency and independence of the system. On the theistic theory, the only continuity necessary is a continuity of plan and purpose, so that all things work together as demanded by the idea which is law-giving for the whole. But this continuity is quite consistent with the successive introduction of new factors, of new modes of activity, and of new forms of existence. These would, indeed, be demanded by the plan of the system, but they would not follow from the antecedent state of the system; and if experience or observation should point to such an order, there is no good reason for objection. It is equally possible that there should be a successive disappearance of factors which the plan of the system no longer calls for. Indeed, it would be hard to find a more baseless dogma, philosophically considered, than this, that the system must contain all its factors complete and changeless from the beginning. We must further remind

ourselves that while a scientific explanation is desirable, it is not the final cause of the universe to be scientifically explicable. There is a deeper interest in knowing the facts than in knowing their explanation; and no true science can have any interest in viewing the facts other than as they are. Unreal simplifications and explanations which do not explain are nauseating to every mind which has a healthy sense of truth and reality. For every believer in freedom there are mental states or acts which cannot be deduced from the antecedent states. These are pure self-determinations which can be understood in their purpose, but cannot be explained in their origin. By their very nature they lie beyond scientific explanation, yet when they have arisen, they then become subject to the fundamental laws of mental action. At the basis of the mental life, also, we meet with elements which cannot be deduced from the antecedent state of mind. These are our sensations, and are contributed or excited from without. But after they have been aroused, they then combine according to certain laws inherent in the nature of the mind. Hence the integrity of the mental mechanism does not consist in a self-enclosed continuity of mental states, but in the identity of those laws which determine the combination and succession of mental states, whether arising from interaction with the outer world or from the pure self-determinations of the mind. The same must be said of the cosmical mechanism. Here, too, for every believer in freedom there is much which cannot be explained as the result of the antecedent state of the system. Human thought and purpose have realized themselves in the physical world, and have produced effects which the system, left to itself, would never have reached. A great multitude of forms and collocations of matter can be traced back to human volition guided by purpose; and beyond that they have no representation whatever. These interventions, however, have violated no mechanical necessity and no laws of nature. They arise from the introduction of a new force or ante-

cedent, and the resultant changes accordingly. The new force which thus enters into the problem cannot be scientifically explained; but the same is true for all the other forces. They, too, are simply facts to be admitted, not comprehended. But even in this case the reign of law is unbroken. The will itself is subject to the parallelogram of forces, and produces effects according to its intensity. And the effect produced enters at once into the great web of law, and is combined with other effects according to a common scheme. Hence the integrity of the cosmic mechanism also consists not in a self-enclosed movement, but in the subjection of all interaction of its members to the same general laws. This fact of general modes of procedure, or of fixed rules of interaction, is the vital feature of the mechanical doctrine. The conception of mechanism as incapable of taking up new impulses or new factors, and subjecting them to a common order of law, is borrowed entirely from our experience with the coarsest of human inventions. The cosmic mechanism is able to receive the greatest variety of impulses from without, and to combine them with the past according to fixed laws. Only in this way does it become adapted to the use of intelligence at all. Whether it is possible for man thus to modify the system, and produce results which the system of itself could not reach, is simply a matter for experience to determine. It may be urged that even then there may be a deeper mechanism determining both man and nature, so that, after all, results still flow with necessity from their complete antecedents; but this is to abandon a scientific doctrine for a speculative one; and, moreover, as shown in a previous chapter, it would lead to the overthrow of all science and rationality.

Thus far we have dealt with the mechanical theory in general as a principle of method, and have discovered both its necessity and its limitations. Its essential feature is the assumption of fixed elementary modes of procedure which

combine according to general laws in the production of complex results. But it cannot have escaped our attention that there is a very great difference in the character of the observed laws. Some laws are transparent; not, indeed, in their origin, but in their consequences. Such are pre-eminently the law of gravity and the principles of mechanics. Assuming these to be true, it is easy to deduce their results as rational necessities. The process is transparent, and the mind is satisfied. This is not so clearly the case when we come to the principles of chemistry and the other molecular forces. Here there is reason for believing that a perfect insight would enable us to connect the antecedents with the consequents with the same rational necessity. But when we come to the laws of life this insight fails entirely. We do find that certain vital phenomena attend certain physical phenomena, but the connection is simply a fact of observation. No knowledge which we possess of the physical antecedents enables us to deduce the vital consequents. The facts of reproduction, of heredity, and the general connection of mind and body, are of the same sort. A general order of law is perceptible, but it is impossible rationally to connect the facts with their physical antecedents. Hence we cannot proceed deductively, but must leave the facts standing side by side, uncertain whether we have a dynamic and logical sequence, or only a concurrence of two different realms. On all these accounts many have decided to limit the mechanical theory to the mathematical interpretation of nature. In any case it has its chief application in the study of physical phenomena. Hereafter we limit ourselves to this realm, and inquire in what sense a mathematical interpretation of nature is possible.

The ideal of the mathematician would be reached if it were possible to deduce every phenomenal consequent from its phenomenal antecedent. Thus we may suppose that in the nebulous time the elements were moving under the influence of gravity alone. It is entirely conceivable that all

the circumstances of their motion should have been expressed in a vast series of equations. Now the mathematical ideal would demand that, by varying the time in these equations, we should see all the new forms and laws of force arise as rational implications of that early state. This would demand that all the various forms of force, as affinity and cohesion, and all the various forms of energy, as heat and electricity, should be but complex implications of gravity. This, however, as we have seen in the previous chapter, cannot be done. No one force is fundamental, but various laws of force have to be assumed. Hence the series of equations which express the circumstances of the elements' motion according to some single law will not suffice for the complete determination of the future. For this perfect insight it would be necessary to combine this series with still other series, which should express results of the other forces which must be assumed. If this were done, then a perfect intelligence could doubtless read off the future of the system so far as it was not modified from without. But these high considerations are of no practical value. The human mind is not able to rise to this perfect insight. Hence, while we think of this possibility as the ideal goal of cosmological knowledge, in practice we have to confine ourselves to details and detached problems. In practice the mechanical theory reduces to the claim that all the phenomena of material compounds can be explained by the interaction and properties of their components. We have now to inquire in what sense this is true.

A common prejudice against the mechanical theory of nature is due to a confusion of abstract mechanics with the system of reality. But theoretical mechanics is based on a series of unreal abstractions. Since explanation aims to construct the complex from the simple, it must necessarily aim to reach the simplest case. Without this its constructions would not be fundamental. But the simplest case is always a feigned and unreal one. There are no absolutely rigid

lines or bodies in nature. The perfectly flexible cord and frictionless pulley are both products of abstraction. These are the unreal simplifications of theory, and yet without them theory would be impossible. We must first compute the result for the imaginary case before we can deal with the real case, for the real case can be understood only as a departure from the simple case. Accordingly, we form the abstractions of rigid lines, homogeneous bodies, flexible and inextensible cords, vacua, etc.; and afterwards we add considerations of friction, resistance, stiffness, etc., as so many additional forces, whose effect is to be computed according to the laws which govern the simple and unreal case. Matter is one of these abstractions. It appears in mechanics as the solid and inert subject of motion; as totally indifferent to its changing conditions, and as everywhere the same. These abstractions serve the purpose of the mechanical theorist, and he is not called upon to consider their metaphysical significance. But when they are mistaken for realities, then it is time to call a halt. This is the source of the notion that a mechanical process is necessarily a monotone. The abstractions of matter, motion, and force are monotonous enough; but reality, while represented by them, must never be confounded with them. The forces and motions which arise between things are never ultimate facts, but only expressions of a system of changes in things. And this metaphysical system of internal changes lies below mechanism as its condition. Mechanism has not to construe the forces which thus arise, but to find their resultant after they have arisen.

This fact enables us to transcend the common notion that the mechanical view of nature provides only for a monotonous repetition of an identical process. It is urged, for example, that mechanics cannot explain even chemistry; and this is true if it mean that mechanics cannot explain chemical affinity. But no intelligent disciple of the mechanical theory proposes to do this. So far as the inner nature of

things manifests itself in a redistribution of matter through motion, the process is necessarily identical. Motion, however produced, is always the same in nature, and gives no hint of any qualitative differences in the forces which cause it. A motion arising from will would be in no respect different from a motion arising from the interaction of the elements. Motion is the common field on which the various incommensurable forces of the elements meet and exchange effects; but the forces themselves may remain as separate and distinct as ever. There is nothing, then, in the mechanical theory, to forbid the greatest qualitative unlikeness among the forces which enter into the process. But these forces do not exist for the theory, except as moving forces; and it claims that, as moving forces, they are subject to the general laws of mechanics. In the case of gravity, we have a purely monotonous process; in chemistry, we have a qualitative and selective process. But no one can doubt that the motions which arise from chemical affinity are as truly subject to the laws of motion as are the movements of the planets. No more is there any room to doubt that the properties of the molecule are due to the properties of the components as they exist in the compound. There is, then, not the least ground for viewing chemical action as less mechanical than that of gravity. Again, in cohesion and crystallization many have thought to find effects more than mechanical. Here, it is said, we have a building force which transcends mechanism. But mechanics, we repeat, is not concerned with the character of its forces, but only with their resultant; and, however marvellous the interacting forces of the crystallizing elements may be, there is no room to doubt that each element moves to its place in accordance with mechanical laws. The source of the objection to viewing these effects as mechanical, so far as it is rational, is in mistaking the non-qualitative abstractions of theoretical mechanics for facts. Because these show no distinctions of quality, it is assumed that the reality which we seek to grasp

by their aid shows no such differences. But this notion disappears when we reflect that mechanics does not inquire into the source of its forces, but only into their resultant. As an extreme illustration of this, so far as the will enters into the physical realm as a moving force, it is as subject to the parallelogram of forces as the physical elements themselves. The mechanical theory, then, is not inconsistent with the utmost variety in natural agents and effects. The desire to reduce everything to a single process—say a vibration, or to a single law, say gravity, or to a single department, say physics—is no necessary part of the theory, but is rather the outcome of a blind desire for unity, which also mistakes unity for all-alikeness. But when we limit the mechanical theory, as we must, to determining the resultants of given forces, there can be no doubt that it is at once universal and secondary in its significance. It expresses, simply, the form and laws of an interaction which it does not profess to found. This interaction cannot be scientifically or mechanically explained. We must either admit it as an opaque fact, or else resort to a teleological explanation, and find its reason in the purpose for whose expression and realization the system exists.

We find no reason for denying that all inorganic changes are subject to mechanical laws, so far as anything is so subject. Does the same subjection exist for that redistribution of matter which takes place in the construction of organized bodies? Again, there is no reason for denying that in any inorganic compound the properties depend upon the properties of the component elements. Can the same be said of those material complexes which we call organisms?

The question as to the mechanical or non-mechanical explanation of life has commonly been unclearly conceived, and, in particular, the mechanical view has been largely misunderstood. Two questions are to be distinguished; (1) the cause of organization, and the ground of the peculiar

properties of organisms; and, (2), the subject of the apparent mental life which, in some degree, the animals generally manifest. We consider them in their order.

So far as analysis goes, every organism can be resolved into elements, all of which are found in the inorganic state. It appears as a highly complex material aggregate, with peculiar laws and with a peculiar unity of its own. Besides, the freest use is made in the organism of laws and principles which obtain in the inorganic realm. Oxidation is resorted to for heat. Osmosis assists in the purification of the blood. In the veins and arteries we have an elaborate system of tubing for conveying the blood to and from the various parts of the body. The laws of the pump, of elastic tubes, and of capillary attraction play an important part in this matter. In the muscles and bones, again, we have a most elaborate system of levers. The entire body, indeed, seems to be a very complex aggregate of physical and chemical processes. Everywhere we find the same laws with which we are elsewhere familiar. There is no dispute on this point; but it is claimed that we need some principle of unity to explain the union of the processes, and especially to explain the construction of the organism. The question, then, becomes, Can we explain the construction of the organism by mechanical forces, or must we assume some new and special force?

This question betrays the misunderstanding of the mechanical theory which is common to both its defenders and its opponents. There is no such thing as mechanical forces, but only mechanical outcomes from given forces. The forces themselves are metaphysical, and may be made as mysterious as we please. It is further urged that no action of physical and chemical forces can explain organization; but this overlooks the nature of force in general. We have pointed out that no thing has separate forces, and that the forces are only expressions of the relations of the elements. In certain relations, there are attractions and repulsions

which we call physical; in certain others, there are attractions, etc., which we call chemical. In still other relations, magnetic and electric qualities are manifested. But in every such case, the force is not the manifestation of hidden powers in the thing, but only a new activity corresponding to the new relation. Forces, then, are not fixed quantities, but vary both in quantity and quality, according to the relations of things. The possibilities of the elements depend upon their conditions. When the conditions of gravitation only are fulfilled, simple quantitative attraction is the only result. When other conditions are fulfilled, the elements acquire new forces, and new phenomena appear. Now, when we remember that the elements themselves are no rigid points endowed with changeless forces, but acquire new forces according to their relations to one another, we see that the mechanical theory has not to explain organization by physical, chemical, or electric forces, but by those forces which the elements have when organization takes place. For this theory in its best form does not claim that physics or chemistry explain life; they explain nothing but physics and chemistry. The theory only claims that just as the elements in certain relations manifest physical and chemical properties, so in certain other relations they manifest vital properties. But just as the properties of an inorganic atomic or molecular complex depend on the properties of the constituent elements, so the properties of an organic molecular complex depend on the properties of the constituent atoms. The mechanical theory, therefore, can assume a vital force with just the same right as it does a chemical force. Indeed, it must assume both, but both in the same sense. To explain gravitation, it assumes a peculiar endowment of the elements and calls it gravity. To explain chemical action, it assumes another peculiar endowment of the atoms and calls it affinity. So also to explain vital phenomena, it assumes again a peculiar endowment of the elements and calls it vitality. These several -ities all stand

on the same basis. They are all alike necessary and are all alike but abstractions from the several forms of atomic interaction. Many upholders of vitalism surrender at this point. They think it sufficient to point out that the elements, as capable of only physical and chemical manifestation, are inadequate to vital manifestation, and that hence we must posit a new endowment to account for the new manifestation. This is true enough, and follows as a matter of definition; but as long as the new endowment is posited in the physical elements, and not in some separate agent, we still hold the mechanical theory. Physics and chemistry do not explain even magnetism; but we never dream that magnetism is something independent of the elements; we regard it simply as a manifestation of the nature of the elements under peculiar circumstances. No one denies vitality as a mode of agency; the dispute is over vitality as an agent. All the other -ities are forms of agency, and the mechanical theorist holds that vitality is no more. The agents are the physical elements in every case.

The mechanical theory is at least clear in its meaning, if not in its possibility. The thought is formally complete. It speaks of activities, forces, and endowments, and names their subjects. The opposing view is far from being either clear or complete. It speaks much of forces without specifying their subject, and thus leaves us without any complete thought. A good instance of this is found in the work on the Human Species by M. de Quatrefages. The author distinguishes various forms of force as gravity, "ethero-dynamy," and life; and posits them all alike as the "unknown cause" of their phenomena. But we are not informed whether the unknown cause be an agent or only a quality. In a proper use of language, a force is not the cause of anything; but the active thing itself is the cause. It is hardly possible that Quatrefages meant to regard gravity as a real agent working on the elements, and not a quality of the elements themselves. Gravity, indeed, is a form of agency

only; and for all that he says, life also may be viewed as a mode of atomic agency. To make the view clear, we must be told whether this unknown cause be an agent separate from the elements, or whether it be only a peculiar quality of the elements themselves. We should further need to know how this unknown cause, which is named as one and singular, should manifest itself so diversely. To refer everything to life, from the plant-spore to man, is to give us a general term instead of an explanation.

On both of these points the defenders of vitalism fall into fundamental unclearness. They fail to tell how from universal and singular life diverse and manifold lives arise. They also neglect to say whether vitality is a quality in the elements which conditions their agency, or whether it is an agent. Most of the arguments for vitality go no further than the maintenance of the former position. Many, indeed, of those who hold that life was supernaturally introduced into the world, fail to escape the mechanical theory. They speak of certain of the elements as being "originally endowed with vitality," and from them life has spread. But this mode of speech contemplates the endowment as a quality, and it further assumes that by some kind of catalytic action other elements also become endowed. It does not regard the endowment as a thing, for then the elements would not have been endowed; but a new agent would have been created. Now if this original endowment was not creative, it follows that the later elements have acquired the endowment, just as they acquire the endowment of any other force—namely, by coming into peculiar conditions corresponding to which new powers are developed. In that case life would not control chemical affinity, nor would affinity account for life; but both vital and chemical action would represent the peculiar activity of the elements under the corresponding conditions. But this again would be the very essence of the mechanical theory, and would represent life as simply an allotropic form of matter. The mechanical

theory has in no way to burden itself with the doctrine of spontaneous generation. The fact that dead matter can become living matter only under the influence of other living matter, does not prove that the qualities of living matter, when it is formed, do not depend on the peculiar qualities of the elements which constitute it. If spontaneous generation were revealed to be false, it would not overthrow the true mechanical theory of life. It is greatly to be wished that the opponents of this theory would be at the pains to understand it. The great source of their trouble is the failure to see that matter and force, as conceived in theoretical mechanics, are pure abstractions, and that the real forces of the elements spring from their inner qualitative nature. Accordingly, they seek to understand how a series of rigid, quantitative lumps could build up an organism by merely pulling and pushing, or knocking against, one another. Of course they fail; for the task represents a myth of abstraction. But, on the other hand, it must be allowed that the mechanical theory has often been presented in this way; and the attempt has been made to get life from matter as thus conceived. Concerning this view, Prof. Tyndall, who, at one time at least, found the promise and potency of life in matter, remarks that any other view whatever would be preferable, and stigmatizes it as absurd and monstrous, and fit only for the intellectual gibbet.

We take a germ; what is it? Analysis finds in it several chemical elements, and nothing more. Is there anything more? Without doubt the elements, as combined in the germ, have properties which they have nowhere else; but is there anything else? Is this living condition anything but one of the possible phases of matter alone? The elements, when combined to form water, have peculiar properties which they never have elsewhere; but there is nothing but the elements. No one doubts that the elements in the germ have peculiar properties; the question is to find their subject. To say that life is in the germ is vague, for it may

be there merely as a property of the elements, as in the case of affinity, and it may be there as a separate agent. The first view makes the elements the real agents, and coincides with the mechanical theory. The organism in this case results from the interaction of these elements with one another and with surrounding matter, and its properties are explained by theirs. Such a view cannot at least be declared impossible. It is a possible view that a germ consists simply of certain physical elements in an allotropic state, and that these elements in the proper conditions begin an interaction with one another and with environing elements, such that the product is the appropriate organism. There would be a redistribution of matter, and this would be ruled by the laws of motion.

This view we mention as possible; but, in order to make it sufficient, we have to add some rather peculiar assumptions. If organisms were all of a kind, or had anything like a common form, it would be comparatively easy to accept the belief that the physical elements which compose a germ, together with those in contact with it, are the only agents concerned. But the forms and qualities of organisms are of the most diverse kinds, while the component elements are all of a kind. Hence it seems as if the elements, because able to enter into any organic form, were indifferent to all organic forms. If there were only one form, we might speak of a "subtle tendency" in the elements to that form, or of an "affinity" or "inherent aptitude" for it. But when they assume all organic forms, we must either make them as indifferent to those forms as the bricks which are built into a variety of structures are to the plan of those structures, or we must endow them with a great variety of "subtle tendencies" and "inherent aptitudes." In the former case, the variety and constancy of form seems to be a matter of chance or accident; for the matter contains no principle of organic form. Yet the second case reduces to the first, for these tendencies are mutually exclusive in real-

ization, and the elements have in themselves no ground for realizing one set of tendencies rather than another. The coexistence of the tendencies does not explain the selection. Hence, in each case, we have to fall back on the arbitrary constants which enter into the equation. As the laws of motion are consistent with all motions, so the elements in general are adapted to all forms. The ground of direction, then, is to be sought in the conditions under which they work. Under given conditions, they can build only a given organism. But these conditions, again, must lie very deep. If they were merely general conditions, germs might be interchanged; whereas, two seeds grow side by side, and each to its typical form. The germ itself contains implicitly all the differences which become explicit in the organism. But these differences are so many and great that no one would pretend to represent them by difference of spatial collocation of the elements which compose the germ. Such collocation would explain nothing, unless it were attended with peculiar forces. Here we may fall back on the conception of subtle tendencies which are, in some way, located in the germ. This notion has been formulated in the doctrine of "physiological units," each of which has the power of reproducing the organism under appropriate conditions. But, unfortunately, even this notion is not as clear as could be wished. It attributes the tendencies to the germ, and forgets that, by hypothesis, the germ is a compound of elements. The tendency, therefore, no matter how "subtle," belongs to the elements which compose the germ. And, without doubt, this tendency is very subtle, for it is really an implicit expression of the plan of the organism. It implies, then, that, under certain conditions, the elements act with constant reference to the plan of an organism; and under certain other conditions, precisely similar elements act with reference to the plan of some other organism. If we should see a pile of bricks moving so as to build a given house, we should probably conclude that

some invisible builder was present; but, if we declined this view, the very least we could say would be, that the plan of the house is implicit in the bricks, and that their activities are all put forth with reference to this plan. If we should refuse this admission, then the house-building would be purely a chance-product—a coincidence of moving bricks. But if, in addition to building a single kind of house, we should see them assuming all possible architectural forms, we should be forced either to appeal to chance or to admit that the bricks contain in themselves the plans of all possible combinations. But reason can allow no appeals to chance, and hence we conclude that, to make the elements adequate to the explanation of organisms, we must assume that the plans of all organisms are implicitly given in the nature of the elements, and so given that, when they begin building upon a certain plan, they forsake all others, and cleave to it alone. The action is still mechanical, but, in this action, the mystic nature of the elements unfolds itself, so that organisms result.

This conviction has led many speculators to assume that life is a property of all matter, which manifests itself, however, only under appropriate conditions. Even this view, however, fails to account for the variety of living things. Life itself is a general term; the reality is a multitude of living things, with the most diverse forms and properties. Life, then, conceived as universal and identical, contains no account of the diverse and singular. To explain these, we must once more fall back on the peculiar conditions, and these again can be explained only by life itself. Thus we are perpetually driven back and forth from qualities to conditions, and from conditions to qualities, in a very confusing fashion. This view can hardly be called satisfactory. Its subtle tendencies can hardly be distinguished from ancient hylozoism, and, oddly enough, it has a peculiar difficulty for the evolutionist. By reducing life to a quality of the elements, it gives it a fixed significance like all the other

qualities; and thus the forms of life acquire a fixity, not to say rigidity, which is quite inconsistent with the plasticity demanded by the evolution theory. Physical and chemical qualities are regarded as manifestations of what the elements are and always have been; and when life is made a quality, it also ought to be equally fixed and changeless in its manifestation. We can escape this difficulty only by saying that the elements themselves are included in an inner evolution, whereby new properties are acquired, and that these result in their working on new and higher organic plans. But this view in turn would be hard to reconcile with the known physical and chemical fixity of the elements. To combine both the constancy and the plasticity, we must assume a fixity for the physical and chemical relations of the elements, while their vital relations are left highly variable and almost undetermined. Some peculiar principle of movement must be assumed in the elements, whereby they determine new and more complex conditions, and thus produce new and higher forms of life.

We have confined our attention thus far to the single problem of organization, and we have found it impossible to explain it by the interaction of the physical elements without very greatly modifying our notion of matter. It may be well to try the theory of vital force. All theories which make this force a quality of the elements coincide essentially with the mechanical doctrine. Shall we do any better with the view which makes life an agent which is separate from the physical elements, but which builds them into form? Life would thus appear as the builder of organisms, and matter would appear as simple material. This view doubtless derives a great part of its clearness and sufficiency from the analogy of man's constructive activities. In itself, it is unclear without some further determinations. Is this agent one or many? Is it the same life which works in all organisms, plants and animals alike, or is there a separate vital agent in each one? In the former case, how does this

agent distinguish between the plans of the different organisms which it is constructing all around the globe at the same time? The readiest answer would be that it is intelligent; but this would go a long way towards confounding it with God. If we decline this view, and say that the agent works differently in different conditions, it is still necessary that it in some way be affected by the conditions in order to respond with the appropriate activity. But as by hypothesis the agent is not intelligent, we must posit a necessary interaction between it and the elements, and the results of this interaction must be mechanically determined; that is, it must be the product of the elements' action into the activity of the agent according to some fixed law. If, however, we prefer to view the vital agent as many, and posit a separate subject in each organism, the question first arises as to the origin of this swarm of agents. The reality is no longer singular and universal life, but discrete individual lives; and these lives must have some source. But supposing this question answered, this life must enter into interaction with the elements. It must both modify and be modified by the matter with which it is in contact. But thus it appears simply as one more agent; and the product of its interaction with the elements must be determined by mechanical laws. As an organizing force, it must be a moving force, and hence subject to the laws of motion and the parallelogram of forces. That this agent is far from unconditioned is shown by its frequent failures; and these again are generally due to some collision with the elementary laws of physics and chemistry. Life, for example, cannot prevent blood-poisoning or distortion, but is fatally bound by its conditions. The physical and chemical laws have such significance that, whatever view we may take of life itself, all valuable practical study in physiology and pathology certainly lies in tracing their effect and in availing ourselves of them. Organization, then, cannot be deduced from life alone, but only from life in a fixed interaction with

matter; and in this interaction the laws of matter are as prominent as the laws of life. Thus organization would be the necessary outcome of fixed law, and in this sense would be mechanical. Most vitalists, indeed, would admit this. They would claim that the work of life in organization is mainly directive, that it does not conflict with the lower forces, but avails itself of them. The only advantage this conception would have over the material view would be in planting the "subtle tendencies" in a single definite agent, and in finding the chief determining conditions in the nature of that agent. This would remove the necessity of departing so widely from the common view of matter as we must otherwise; since we could then allow, what all knowledge seems to indicate, that matter in itself is essentially indifferent to organic forms, and assumes them only as it comes into interaction with some agent which contains the ground of form within itself.

For the present we leave this question, and pass to the other and more important one concerning the subject of the apparent thought and sensibility which the animal world manifests. Strangely enough the discussion has generally been confined to the cause of organization, whereas the point is quite subordinate. Neither the mechanical theory nor the theory which makes God the builder of the organism provides any subject for the mental life. If the body be simply a function of the physical elements, it is sensitive and truly living only in appearance. In fact, it is no more alive than any complex inorganic mass. The difference is phenomenal only, not essential. Of course the organism has many qualities which other combinations have not; but, in fact, since matter and motion are all that is concerned in the organism, there is nothing but matter and motion in it. But feeling is something totally unlike motion; and no analysis of motion will reveal feeling as one of its constituents. There is no way of passing from one to the other.

In unclear thought, the darkness and mystery which cover molecular processes seem able to accomplish the transition; and, indeed, who can tell what might not be possible in those dark recesses? But we can escape this folly by conceiving our vision sharpened until the elements stand apart in our intuition as they are said to stand apart in fact. When we do this, we shall perceive no more explanation of feeling in the movements of the molecules than in those of the solar system. The mechanical theorists always delude themselves with words at this point. They point out that in chemistry we pass from the atom to the molecule, and from the simple molecule to the complex molecule, and from the complex molecule to the organic molecule, and from the simple organic molecule to complex organic molecules, and from these again to groups of the same. But these already exhibit signs of life and organization. After a little skirmishing with the formidable terms of organic chemistry, reproduction and heredity are quietly brought in, and the evolution of life from the inorganic is complete. Not a few speculators fancy that the production of organic chemical compounds has very great significance in illustrating the rise of life. A word will suffice to show the verbal character of this process. If we begin with matter and motion, we must end with it also; and whatever cannot be construed in terms of moving matter must be rejected as illusory. There is no difficulty in passing from the atom to the molecule, or in passing from simple molecules to complex molecules and groups of molecules; but there the advance ceases. All that remains is to increase the complexity of the molecules and the molecular groups; for this is the only direction which the redistribution of matter can take. When, then, the materialist next presents us with the organic molecule, we are a little puzzled to know what he means by the new adjective. It may mean simply a molecule which is commonly found only in connection with organisms; but in that case it is nothing to the purpose. But if it mean something

more than complex, we need to have the distinction between an organic molecule and a complex molecule more clearly stated. It may be said that an organic molecule is essentially only a highly complex molecule, but it manifests different phenomena. We reply that we are after the essential and not the phenomenal. There is no dispute as to the phenomena of organisms, but as to their essential nature. And if their phenomena are all explained by the interaction of the elements, then organisms are essentially atomic complexes and nothing more.

The truth is, as Mr. Malcolm Guthrie has admirably shown in a criticism of Mr. Spencer's formula,* that this use of "organic," "organization," etc., is simply to enable us to bring in laws which are not deduced from the starting-point, but are borrowed from the organic realm, and are utterly incommensurate with any known inorganic laws. But if we should confine ourselves entirely to complex molecules, we should clearly see the impossibility of advancing beyond them. Such groups would appear as products of physical and chemical attractions and repulsions, and even the most determined evolutionist would hardly venture to speak of them as alive or as subject to experience and heredity. But if, instead of calling these groups complex molecules and groups of molecules, which by the theory is all they can be, we call them organic, then by the sheer force of the terms we shall find it easy to pass on to speak of organization and heredity; and the way will be open before us. We can then appeal to life and biological laws without any reference whatever to the possibility of interpreting them in terms of matter and motion. But if thought be clear, this procedure must be seen as delusive. There is nothing in the most complex organism but complex molecules; and the only difference between the elements as thus grouped and as otherwise grouped is purely phenomenal. A living thing is es-

* "On Mr. Spencer's Formula of Evolution."

sentially an inorganic complex which seems to be alive. In itself one thing is as dead or as living as another. The distinction is only in appearance, and even this appearance is impossible as long as there is no mind to which it appears. A mind which could grasp things as they are would see in an organism only a complex system of moving atoms. Along with this admission goes the absurdity of the notion of heredity. The laws of the elements are hardly to be viewed as acquired or inherited; and since these laws determine all compounds, the organism also must be fixed. Life, then, is phenomenal; and an animal is but an automaton which only seems to think and feel.

We get no relief from this conclusion, if we endow the atoms with the most mystic qualities, or even allow them to be alive. These mystic properties remain subjective to each atom, and manifest themselves externally only in changes of place and condition. The inner life, therefore, would not appear as any factor of observation, but would only be one of the inner forces which condition redistribution. Such a view might help in explaining organization, but not in accounting for the life of the organism. For on this view the organism still remains an aggregate without any subjective unity, or subjectivity of any sort. Hence, the feeling and thought which the animal seems to manifest are again phenomenal. An appearance of feeling and thought is possible in an aggregate or automaton; but their reality is possible only to some unitary subject which thinks and feels. To say that the organism thinks and feels is thoughtless; for the organism is just such a reality as the public in social science. When we speak of the public thought and feeling, we know very well that only individual persons think and feel. The public, as such, neither thinks nor feels, but only the persons who compose it. We must, then, reduce the animals to automata which mimic thought and feeling, or we must allow a real substantive subject of their mental life.

We are no better off with the view which regards God as the builder of the organism. For still the organism appears either as a pure phenomenon, or as a complex of discrete activities, and as such it is without any mental subject. Hence, any thought and feeling which the animal may show are phenomena only, and do not indicate any true thought or feeling which the animal has. The view which regards life as a kind of universal agent, manifesting itself in different forms, is subject to the same difficulties. It provides no subject for the individual life and feeling of the individual animal.

Thus it appears that the most important question concerning life is not that of organization, but that of the subject of the thought and feeling which animals manifest. Where it is merely a question of organization, as in the vegetable world, there are several possible views, each of which would be adequate; but when mental manifestations appear, as in all the higher orders of animals, then we must make a choice. Either we must view these manifestations as purely phenomenal, and make the animals senseless automata which only mimic thought and feeling, or we must declare that with each new animal a new factor is introduced into the system as the thinking and feeling subject of the animal's experience. There have been attempts at the former view. The Cartesians held it for a time; and it has been lately revived by various speculators. The recent revival, however, has been half-hearted, in that while the animals are called automata, they are also called conscious automata. But the adjective is totally out of place. There is no subject for the consciousness; and we must allow on this theory that the consciousness is only in seeming.

The decision between these views can be reached only by observing the action of animals. The doctrine of animal automatism we believe to be one of the idols of the speculative den, and one which no observer of animals will worship who is not mentally debauched by materialistic speculation.

No other will long consent to believe that a horse or a dog, when manifesting fear or joy or shame or anger, really feels nothing, but is only an artful automaton. It would be such a long step towards utter scepticism that there would be no longer any reason for trusting appearances at all, and thus science would perish. Again, our faith in our fellows' thought and feeling would be left utterly groundless; for there is little more reason for believing that a man feels than for believing that the brutes feel. Hence, the doctrine of automatism in brutes has always tended to the same doctrine for man. But, if we regard this view as untenable for both man and brute, we are shut up to the view that God, who is the omnipresent factor in all on-going, posits with the growing organism a new being, which develops along with it as the subject of the apparent thought and sensibility. Any other view reduces the animals to mechanisms which only mimic thought and feeling.

We hold, then, that the creative action of God is not confined to the production of the physical elements, or of that series of activities which constitute the elements, but that it includes also the production of animal and human minds according to that order which he has adopted as the norm of his action. Indeed, this conclusion is not dependent on any particular view of the infinite whatever, but results necessarily from the admission that thought and feeling really exist in man or animal. Whether the infinite be free and intelligent, or blind and necessitated, it is alike necessary to view all finite manifestation and activity as determined by it. The order of this manifestation cannot be determined in advance. It is sheer assumption, on any theory, to say even that the physical elements were all produced from or by the infinite at once, or that they have always existed. If the infinite be blind, its emanating activities may be successive as well as coexistent, and they may change completely in character from time to time. Indeed, on the hypothesis of absolute evolution, which embraces all the forms of being, it

is infinitely improbable that the elements were all evolved at once. On the theistic view of the infinite, we can only say that the order of appearance and disappearance of the elements or other factors is to be found only in the plan of God. If that plan calls for appearance or disappearance, the fact will follow. On the non-theistic view, we are still forced to find the ground of all finite being and movement in the nature of the infinite. What is thus a necessary admission in every theory, even in the case of the physical elements, need not cause any surprise when insisted on for the mental subjects which appear in the course of the system. The view will appear incredible only to those materialists who view the elements as a series of self-existent and independent things; but their views are not entitled to any further consideration.

We return now to the question of organization and the mechanical theory of life. It may be held, (1) that the soul itself, in its unconscious activity, is the builder of the body; (2) that the body is built by a vital agent, distinct from both matter and spirit; and, (3), that the body results from the interaction of the elements. The first view would demand the assumption of a plant-soul, to explain vegetable organization. The second view is by no means a clear one; and the third leads to the most mystical conceptions of matter. Much might be said of the difficulties and advantages of each of these views, but, from a speculative standpoint, the simplest view is not identical with any one of them. To develop this view, we must return to our own metaphysical standpoint. Thus far we have debated the question on the current theories of matter, and have made our criticisms from that standpoint. But, for us, the physical elements are simply forms of the activity of the infinite, and their forces are simply expressions of their mutual relations in the world-plan. The elements, therefore, appear to us as no fixed and changeless beings, with properties which they possess absolutely and in their own right, but as flowing formulas

of the divine activity. Hence they represent the flowing-forth of the divine purpose into realization, and they have at any instant just those forces which that purpose demands. We may say, then, that the organism is the resultant of the physical activities, and that these physical activities are, in turn, the resultant of the organism. This paradoxical statement means this: If we could observe the development of any germ, so as to perceive even the elements themselves, we should probably see, so far as the body is concerned, just what the materialist supposes. We should not see any demiurge drawing the elements back and forth, but all motions would appear to spring from the inner nature of the atoms. But, on the other hand, the atoms themselves are no rigid, self-identical points, but are acts of the infinite, and, as such, have all their peculiar qualities or forces from the end towards which the work proceeds. God does not first make a lot of raw material, with rigid laws, and then combine it as best he can, but matter and all its laws are but his purpose incessantly realizing itself. The conception of matter as something given and fixed we repudiate entirely. It is a notion which rests upon the supposition that God's relation to the system is the same as ours. We hold, then, to a phenomenal materialism and an absolute spiritualism. Matter is simply a form of manifestation of which the reality is the immanent God. Yet, throughout this manifestation there are certain general modes of procedure which can be traced in all material aggregates, whether living or dead, and which thereby found the mechanical theory. It is plain that, with this view, we feel no need of any special vital agent to construct the organism. A new subject is needed only to account for the mental life of the being.

From this standpoint we can form some general judgment of the relative validity of the mechanical and the organic theory of the system. In the beginning of the chapter we pointed out that the organic theory is untenable, except as

a doctrine of final cause and of unity in the system. Both theories are alike necessary to the complete interpretation of the system. Owing to its history, the mechanical theory has generally had a tendency to run off into corpuscular atomism, and thus to explain the system by a set of elements which are essentially unrelated to any system. The elements as thus conceived would have no affinity for any one combination rather than for any other, and thus the actual combinations would be mere coincidences or accidents. For example, the existence and constancy of the chemical classes would not be founded in the nature of the elements, but in mere coincidence. Their nature would be as compatible with their non-existence or with their existence in any other form. One speculator, in his zeal for this conclusion, has recently suggested that the chemical classes are only cases of the survival of the fittest, though why one combination should be fitter than another, if there be no original tendency to it, he neglected to say. In like manner, on the corpuscular theory, all orderly combination and sequence would have no foundation in being, but would be only a coincidence of independent things. But this is the essential idea of chance. Chance does not mean the lack of causation, but the coincidence of mutually independent series of events. Thus the undesigned meeting of two persons is called a chance-meeting, because the movements of neither were undertaken with reference to those of the other, nor implied those of the other. In this case two series of movements have a point of junction, and, because mutually independent, the junction is called an accident or coincidence. In like manner, the extreme mechanical view would make all law, order, and harmonious combination mere coincidences of elements which have no essential relation to their effects. This is the view which Prof. Tyndall has denounced as absurd, monstrous, and fit only for the intellectual gibbet.

But the human mind is such that it cannot regard orderly and constant coincidence as mere coincidence. If a brick

should fall from a housetop upon a passer-by, it would be set down to chance; but if it were a regular thing, the coincidence itself would become a problem for investigation. The result of such considerations has been a very general insight into the fact that a mechanism which is to explain the harmonies of the system must be one in which those harmonies are implicit as its inner law. Accordingly, there has been a general call for new definitions of matter among those who seek to extend its possibilities. Some have suggested that life and mind be included in its definition; and one, who, in a moment of vision, discerned in matter the promise and potency of all manifestation, soon reduced his prophecy to a tautology by defining matter as the mysterious cause of phenomena. Still others, who deny any vital principle, nevertheless instruct us that the development of the organism is ruled by the idea of the whole, though how an idea can rule or direct physical forces, unless it be inherent in them as their inner law, is not made clear. Thus the process has gone on of stuffing wisdom and intelligence into the alleged mechanism, until it has become almost identical with mind, and some have even announced an obligation to worship and adore it. But the mechanical explanation of teleological problems is a pure tautology; for it has to frame its mechanism to fit the effects, and then the deduction of the effects is merely drawing out what has been put in. There is neither great difficulty nor great gain in viewing the mechanism as adequate when it is first made so by hypothesis. It is only as a principle of method, and as dealing with the form of interaction in the system, that the theory has any value. As soon as it claims to give a theory of causation, or to explain the teleological problems of the system, it becomes insufferably tedious and self-stultifying.

The organic conception, on the other hand, has its peculiar value. It is justified, first of all, in denying the independence of mechanism. We have seen that a complex of in-

teracting agents is impossible, except as dependent upon a basal unity whose purpose or nature is the ground of the nature and laws of the system. The organic theory is further justified in denying that the system can be explained by agents or processes which are not essentially related to it. The idea of the system must be expressed in the nature of these agents before it can be realized by them. In this ideal sense, the whole must precede its parts, and the parts are implications of the whole. But when this ideal relation is mistaken for a causal relation, or when "Nature" is hypostasized into a mysterious substantive unity, then the theory becomes absurd. The declaration that the whole precedes its parts can only mean that the processes of the system must take place according to the idea of the system. But this necessity does not lie in the idea, or in some incomprehensible spontaneity of instinct, but in the fact that the Creator determines them according to that idea. Thus it once more appears that the organic theory, so far as tenable, coincides with teleology, and that it demands the mechanical theory as its necessary complement. To know what a thing is for does not tell us how it is brought about, and to know how a thing is brought about does not tell us what it is for. The affirmation of ends must always be supplemented by the study of means; and, on the other hand, the study of means must not displace the belief in ends. This error is possible only to such minds as fancy that to see how a thing is done proves that there is no purpose in the doing. This fancy, in turn, rests upon the further fancy that the uniform methods of the cosmos are ontological necessities which realize themselves. But, for us, this fancy is a thing of the past. We hold that there are general modes of procedure in the system, and that the interaction of things takes place according to fixed laws; and we likewise hold that the interaction which underlies and founds the mechanical system is itself the expression of purpose, and is realized only through the free and continuous activity of the infinite.

Here our cosmical inquiry ends. In treating of the nature of the infinite, we found that an apriori cosmology is impossible. There is no passage from the notion of being to its cosmic manifestation. The knowledge of the latter can be learned only from experience. Whether viewed as a necessary outcome of the nature of the infinite substance, or as expressing the plan and purpose of the Creator, it is alike impenetrable to deductive thought. From our own theistic standpoint, we are forced to find the reason why the system is as it is in the purposes of the infinite. This fact, in itself, would not be incompatible with an insight into these purposes, and into the means of their realization; but both the purposes and the methods of accomplishment are largely hidden from our knowledge. In most cases, where design is manifest, the end seems to have little worth; and where a worthy end is affirmed, the system seems quite indifferent, if not inimical, to its realization. The only end which can be allowed to have absolute value is an ethical one; but it is hard to detect any relation to such an end in the mass of cosmic details. It is still harder to find any reason why this end might not have been secured in a more direct and efficient way. Viewed as a whole, the great cosmic drift does not seem to set very decidedly in any direction, and the mass of results seem more like products than purposes. The great forms of elementary activity are maintained, and in their interaction they give rise to various products to which it is difficult to ascribe any further significance. The belief in purpose in the system has its special embarrassments as well as its advantages. We cannot do without it, and it is not easy to do with it. In particular, it precipitates upon us the great mass of failure, insignificance, and mischief which forms so large a part of visible nature, and demands an interpretation. And here all human wisdom is at an end. The problem of evil to which these questions belong admits of no speculative solution at present. We cannot give up our affirmation of pur-

pose, but we must admit that the purposes of the system are mostly inscrutable. Yet, still, we hold that neither the existence nor the circumstances of the cosmos are in any respect ontological necessities, but, both in extent and duration and character, it is what the plan of the Creator calls for. Whether uniform or variable, stationary or progressive, depends on something deeper than itself. It is possible that the elementary forms of action are fixed; and it is equally possible that these also undergo variation. The necessary uniformity of natural law is a postulate for which we have not the slightest rational warrant. Experience is the only source from which we learn what the laws of nature are, and from which we learn that these laws are even relatively fixed.

Part III.

PSYCHOLOGY

PART III.—PSYCHOLOGY.

CHAPTER I.

THE SOUL.

Thus far we have dealt either with being in general or with so-called material existence. We have now to consider spiritual being. There are certain leading principles and processes in this realm which it is the province of metaphysics to investigate. Until this is done, empirical psychology is a mere chaos of alleged facts, partly true and partly false. And the facts themselves, like the facts of physical nature, depend for their interpretation on some metaphysical conception. Accordingly, it is found that the various schools of psychology, like the various schools of cosmic speculation, agree as to the phenomena, but differ in their metaphysics. Hence, also, harmony and advance are to be secured, less by a thoughtless heaping up of observations than by a study of the metaphysics of psychology. Induction which is guided by no principle leads to nothing, whether in psychology or elsewhere.

The central point of psychology is the doctrine of the soul. It is, indeed, the central point of all philosophy and science. For knowledge in general assumes the trustworthiness of the knowing power. Whatever throws discredit on this discredits knowledge itself. If knowledge is to be admitted, we are under obligation to reach some theory of

mind which shall be consistent with such admission. But not every theory of the soul is consistent with trust in knowledge. Hence the importance of the question.

The chief debate about the soul concerns its reality. This is commonly called the question of materialism or spiritualism; but these terms are hardly exact without some further determination. The true question is whether the soul be substantial or non-substantial, a true thing or a function of material activities. Materialism itself is ambiguous. It may imply the crude theory of matter held by uncritical common-sense, and it may imply merely the unreality of mind. This ambiguity of the term has been used by many speculators to escape the charge of materialism. They mean by their denial that they do not hold the crude lump-notion of matter, but regard it as something mystic and wonderful. At the same time, they teach in the most decided manner that mind is the unsubstantial product of organization. But as this is what common-sense understands by materialism, we shall use the word as implying no specific theory of matter, but only as implying the non-substantiality of mind. In this sense, materialism is compatible with any and every theory of matter, and even with idealism or nihilism. For while one holds matter to be but a phantom, one may also hold mind to be a phantom, and one may further hold that the phantom mind never appears except as an attendant of the phantom matter. Historically, as in the case of left-wing Hegelianism, idealism has often transformed itself into materialism; and it is noteworthy that the chief materialists at present hold an essentially nihilistic philosophy, though many are Spinozists. These facts show how close an alliance there may be between these apparent opposites. There is an idealistic materialism; and there is also a materialistic idealism. Materialism, as understood by common-sense, is to be discovered not in its doctrine of matter, but in its doctrine of mind. Every system which reduces mind to a sum of mental states, and then views these states as the result

of organization, is materialistic, no matter what it may call itself, whether nihilism, idealism, pantheism, or agnosticism.

If we should appeal to the results reached in the preceding sections, we might regard the debate as already decided against materialism. We have there found that matter can lay no claim to a properly substantive existence, and that spirit only fills out the notion of being. But inasmuch as we have returned again and again to the standpoint of spontaneous and unreflective thought, we do so once more, and debate the question on the assumed reality of the physical elements.

The positive argument for materialism is undecisive. It consists entirely in appealing to the well-known fact that the condition and development of the body are important factors of the mental outcome. But this fact would result on any theory. If, as every one admits, the mind is now conditioned by the body, it is plain that the health and perfection of the body must have a profound significance for the mental life. But there is no need to dwell upon truths so nearly self-evident. It will always be a highly important duty of the physician to study the mental significance of pathological physical states; but only extreme superficiality can expect thereby to solve the problem of the soul.

The first great difficulty which materialism meets is the complete unlikeness of physical and mental facts. Thoughts and feelings have nothing in common with matter and motion; and no amount of reflection will serve to identify them, or to deduce one from the other as its necessary implication. But physical science deals only with matter and motion and moving forces, and all its explanations are in terms of these factors. The molecule and the mass are only specific groupings of material elements; and the forces with which physics deals are known only as related to motion. Hence a physical explanation of thought and feeling must consist in a representation of them in terms of material

movements and groupings. Just as a given number of elements grouped in a certain way is a chemical molecule, so, if thought is to be physically explained, we must be able to say that a certain number of elements grouped or moving in a certain way is a thought.

Most materialists recognize the absurdity of this view, and propose to escape it by a new definition of matter. Matter conceived as the movable explains only motion and aggregation; but is it not possible that we have held too low a view of matter? Indeed, how can we tell what matter is, except by observing what it does? In its inorganic state it does, indeed, show no signs of life and mind; but it has other properties also which appear only under certain conditions. Its chemical affinities are not always manifest; and its building energies, as in crystallization, do not always appear. Apart from experience, who would have dreamed that a slender wire could take up human speech and deliver it miles away, or that water contains such mystic building powers as it shows on the frosted pane? Again, all matter has relation to magnetism and electricity; and yet these qualities but seldom reveal themselves. Why may we not say that mental properties also are hidden in the mysterious nature of matter, and manifest themselves upon occasion? They would not, indeed, be deduced from the other properties of matter; but they would, nevertheless, belong to the same subject as the physical qualities.

This conception underlies all prevailing forms of materialism. It views materiality and mentality as the opposite sides of the same substance. It even regards itself as the higher unity which transcends and reconciles both materialism and spiritualism. Monism is the name which it especially affects at present. In particular, it assumes to be superior to vulgar materialism. The notion that matter as commonly conceived can explain life and mind it declares "absurd, monstrous, and fit only for the intellectual gibbet." All definitions of matter which exclude life and mind, it

declares inadequate, if not untrue. Matter as the movable will not suffice; but matter as the mystic is all-sufficient.

The illustrations given serve rather to explain the doctrine than to recommend it. In particular, they fail to remove the difficulty arising from the unlikeness of physical and mental states. The various mystic forces referred to all agree in being moving forces; and their outcome is always found in some grouping or movement of the material elements. Their effects can be represented in terms of matter and motion; while the other mystic quality which produces thought cannot be represented in such terms. With this admission, the theory passes from the realm of science into that of speculation. The impossibility of construing thought in terms of matter and motion is admitted, and recourse is had to a kind of materialistic mysticism.

If this conception were allowed, it would remove to some extent the difficulty contained in the incommensurability of physical and mental facts. Neither would, indeed, be deduced from the other; but a certain unity of view would be secured in our world-theory. The antithesis of matter and mind would be made non-essential, both being but opposite manifestations of the same subject. The view, however, is not clear in its meaning, and still less in its possibility. In any case its value is extremely slight. It leaves mind and matter as unmediated antitheses side by side, and without any assignable communication. The word monism also is misleading. One would suppose it to mean that there is but one reality, of which mentality and materiality are but the opposite forces. Etymologically, of course, it could have no other significance. However, most of those who call themselves monists hold some form of the atomic theory, and with them monism must mean all-alikeness. To call atomism, which is the extreme of pluralism, monism, is extremely loose and leads to looseness. It leads many to imagine that some great simplification has been reached, whereas the simplicity is entirely in name. The doctrine being unclear-

ly conceived, it is of course ambiguously held. Sometimes it means that there is but one kind of existence, although there are numberless individuals; and sometimes it means that there is but one reality, and that all phenomena, however antithetical, are but manifestations of this one. Frequently the same speculators hold both views without any suspicion of their difference, and change unconsciously from one to the other, as the needs of their argument may require. We consider the theory in both forms.

But before going further, we must consider a difficulty which arises from this new conception of matter. The materialist especially affects the title of scientist, and this makes it necessary that he pay some attention to the recognized doctrines of physics. The physicist regards his science as dealing only with the redistribution of matter and motion; and this redistribution he views as subject only to the laws of force and motion. If, then, thought is to result from physical activities, it must in some way result from the movements of the elements. This attempt to be physicists and materialists at the same time has made the materialistic doctrine essentially unclear in its meaning as well as in its possibility. The claim that thought is the product of organization leaves the sense of this production undetermined. The teaching of some of the earlier materialists was that thought is secreted by the brain as bile is by the liver. But as the secretory organs either eliminate from the blood what was already in it, or else make their products from material contained in the blood, this view would imply either that thoughts pre-exist in the blood or that they are made out of blood. In either case thought would be material, and might be seen if our eyes were somewhat sharper. But this notion was too coarse for any patience; and materialists were not long in denouncing it as the materialism of the savage. They insisted on the immateriality of thought as strongly as the spiritualists; but they still held that it is a material product. And this makes it all the more necessary to know

in what sense this production is to be taken. If thought be material, there is no absurdity in calling it a material product; but it is hard to see how its immateriality is to be reconciled with its material origin. All other material effects are states, or phases, of matter; and they become causes in turn, and manifest themselves in material movements and combinations. The trouble here arises from the law of the conservation of energy and the assumed continuity of the physical series. We have two series to deal with—first, the physical elements in motion, and, second, the resulting thought-series. According to the materialist, the first series is the independent one; and, as a physicist, he must view it as subject only to the laws of force and motion. If now we aim to make the physical series self-contained and independent, we must deny that physical energy ever becomes anything else. For if physical energy is really spent in producing thought as thought, the continuity of the physical series would be broken, and energy would disappear from the physical into the mental realm. In that case, either energy would be lost, or thoughts would be as real and as active as things. The latter view cannot commend itself to us as materialists, and hence we are shut up to the view that the physical series is self-contained and independent. It suffers no loss and no irruption. Both energy and continuity are absolutely conserved. Each physical antecedent is entirely exhausted in its physical consequent; and conversely each physical consequent is fully explained by its physical antecedent. In the strictest sense, the physical series goes along by itself, and subject only to the laws of force and motion. But in such a view, thought as such cannot be an effect of the physical series; for under the law of conservation there can be no effect which does not in turn become a cause. If energy is expended, it produces some other form of energy either kinetic or potential, and this new form possesses all the causal efficiency of the old. Hence, as the physical series is assumed to be continuous, and thought is

powerless, thought is shut out from the series of cause and effect. We must, then, hold that physical energy is never spent in producing thought as thought, but only in producing those physical states which have thoughts for their inner face. These thoughts, again, as thoughts, are powerless. They affect the physical series not as thoughts, but as having physical states for their outer face. The thought-series as such is not the effect of the physical series, but simply its attendant. When the physical series is of a certain kind and intensity, it has a subjective side; but the reality, the energy, the ground of movement are entirely in the physical series, and this goes along by itself. No study of this series as such would reveal the thought-series which accompanies it.

The view thus presented is the current one among materialists. From fixing their thoughts exclusively on the physical series, and from their desire to avail themselves of the doctrines of physics, they have been led to deny all energy to thought as such, and to affirm the continuity and independence of the physical series. The bearings of this doctrine on knowledge we shall discuss hereafter; for the present we continue to expound the doctrine itself. For not even yet is the doctrine clear. Thought is reduced to a powerless attendant on some phases of the physical series, or to a subjective aspect of certain physical activities. But there is no assignable ground for this subjective attendant in general, and of course there is no ground why it should attend as and when it does. If we could look into a brain, we should see on this theory a great variety of molecules in various kinds of movement. We might see right- or left-hand spiral movements, or circular, or elliptical, or oscillatory movements. Some of these movements would be attended by thoughts and some not. But what is the ground of difference? Assume that an elliptical movement of definite velocity is attended by thought, while an oscillatory movement is not so attended, there is still no reason why

either movement should be attended by thought, and also none why one should be thus attended rather than the other. Both the elliptical and the oscillatory movements confine themselves strictly to being what they are; and neither by hypothesis loses anything which passes into the thought-realm. If we might say that an elliptical movement is a thought, we might get along; but this view has been turned over to the savage. But since the elliptical movement confines itself to moving, and loses nothing for purposes of thinking, the thought-series appears as a gratuitous and magical addition to the thing-series. There is no reason why it should appear at all, and none why it should appear where and when it does. The most profound reflection upon molecular groups and movements reveals no reason why any should be accompanied by an incommensurable attendant thought, or why one rather than another should be thus attended. If there were a mental subject in interaction with the physical series, it is easy to conceive that different states of that series might be attended by different mental states; but when this is not the case, the connection is one of pure magic.

Magic, however, is an evil word, and we must seek to escape it. We recur, then, to the doctrine that matter has a mental as well as a physical side, and that the former is as original as the latter. But in order to explain the form and peculiar character of any specific mental manifestation, we must further allow that the mental side is in interaction with the physical side. Without this admission, thought might appear at one place as well as at another, and in one form as well as in any other. The opposite faces in no way remove the necessity and complexity of this interaction. Thought in general is only a class-term; the reality is always specific thoughts about specific things; and in order that these thoughts shall appear as, and where, and when they do, it is necessary that the inner series and the outer series shall be in mutual determination. But this necessi-

tates the further admission that the mental series is as real a form of energy as the physical series; and this raises the question whether matter as moving, or matter as thinking and willing, be the ultimate fact. These difficulties have not been considered by the materialists as fully as could be desired, and the result is that they have seldom understood their own doctrine, although it seems so clear. They can maintain the independence of the physical series only by affirming the materiality of thought, or by making the connection of the thought-series with the thing-series one of pure magic. Both of these views are sheer nonsense; and there is nothing for the materialist to do but to fall back on the doctrine that the physical and the mental series are opposite sides of the one reality, and that both are equally real. But this view also is unclear until the relation of these two sides is more clearly determined. It may mean that there are two orders of energy—physical and mental—which never interchange. In that case, both their coexistence and their harmony would be an opaque fact, and our monism would vanish into hopeless dualism. It may also mean that the same energy appears in both series—in the one as moving matter, and in the other as thought and feeling. In that case, we should have a magical passage back and forth of energy; and thoughts and feelings, as well as physical forces, would become determinant of the course of things. Energy would constantly disappear from the physical realm without any physical effect; and physical effects would be found which would not be explained by their physical antecedents. But such a mixing-up of two realms as this would imply would be fatal to all clearness of thought. There would be nothing in this view to forbid even the wild notion that the whole physical realm might disappear into the realm of thought, so that thought and its laws should be all. Neither physics nor metaphysics could long content itself with notions so void and formless.

A final view, and one to which materialists commonly re-

sort when driven to these straits, is, either that thought is a phenomenon of matter, or that both mentality and materiality are the opposite phenomena of the same substance. Phenomenon is the word which is supposed to remove all difficulty; but, unfortunately, it is the most treacherous ally the materialist can have. For a phenomenon implies not only something which appears, but also a subject to which it appears. A phenomenon as such cannot exist apart from consciousness. When, then, the thought-side of matter is said to be phenomenal, the question at once emerges, What is the subject, and where the consciousness, for which the phenomena exist? From the nature of consciousness, the thought-series is never phenomenal, but is the necessary condition of all phenomena; or if we insist on calling it phenomenal, it is never phenomenal to the external observer, but only to the inner self. But materialism provides no inner self, and hence it cannot speak of phenomena in any proper sense of the term. The materialist, then, cannot escape the difficulties connected with the relation of the physical to the mental series by making either or both phenomenal; for the very term implies the mental subject which the materialist denies.

We think it clear that materialism is far from plain in its meaning, to say nothing of its truth. When forced to express itself clearly, it is with difficulty prevented from vanishing into absurdity. We have next to inquire into its adequacy to the facts of our mental life. If we should endow the elements with an inner life which manifests itself under appropriate conditions, would it be any more possible to dispense with the conception of a substantial soul? We think it possible to show that this view both fails to explain the most prominent facts of our mental life, and also leads to the overthrow of all knowledge and science.

To begin with the first point, thought and feeling demand a subject. In experience, we know nothing of thoughts and

feelings existing apart by themselves. The universal fact is, not feelings and thoughts exist; but I think and I feel. The empiricist, though he claims to build on experience, ignores this fact altogether, and attempts to build the mind out of sensations. In fact, however, a sensation is a purely abstract term taken from the affections of a sentient subject, and is totally without meaning considered in itself. But the empiricist breaks the word from the only connection in which it has any meaning, and then parades it as the basis of the mind itself. I think and feel is, then, the universal fact. What is the I which thinks and feels? The materialist, aided and abetted by the empiricist, says that the I is only the sum of the thoughts and feelings; and that there is no thinking and sentient subject in the case. But the empiricist is a dangerous ally for the materialist; for upon occasion he does not hesitate to declare that matter itself is only a projection of feelings and sensations. Besides, good sense protests that it does not know what is meant by thoughts and feelings without a subject; and consciousness also insists that I do think and feel. Here the materialist may say that of course I think and feel, but the I is just the sum of these thoughts and feelings. This, however, when put into other words becomes hopeless nonsense; for it amounts to saying that the sum of my thoughts think, and the sum of my feelings feel. But a sum as such is nothing; the things summed are the realities. Hence the statement is that thoughts think and feelings feel. But to think is to have thoughts, and to feel is to have feelings; hence, thoughts have thoughts and feelings have feelings. It would also be an interesting problem to determine the relation of the thoughts and feelings which are had to the thoughts and feelings which have them. To escape this farrago of unintelligible absurdity, we must return to the notion of a self which really thinks and feels.

But may we not say that the body or the brain thinks and feels? Of course, there must be a subject of the men-

tal states; and that subject is the organism itself. We have endowed the elements with a mystical inner life, and why may not the mentality of the self be merely the integral of the nascent mentality of the elements themselves? This notion, which underlies most of the monistic doctrines, is one of the crudest fancies ever begot in an unclear brain. If we reflect upon it, we see that it conceives of mentality as a kind of stuff which can be heaped up. One writer, indeed, speaks of a "mind-stuff" in all matter which is imperceptible in the inorganic state, but which, when aggregated in certain ways, reveals itself in mental products. The same writer elsewhere speaks of the doctrine that thought is material as the crude materialism of the savage; and yet this fancy of "mind-stuff" is the same thing in another form. But the mentality of the elements exists only as a quality of the elements themselves, and as such can never be separated from them or aggregated in any way. The elements themselves may be variously aggregated, but their qualities admit of no aggregation. When, then, we say that the body thinks, we are met by the following difficulty: The body as an aggregate has no reality. The realities are the elements, and they do whatever is done. The body is like the public in political science. We attribute thoughts, feelings, and actions to the public, and yet the public is and does nothing. The reality is the individuals which make up society. When, then, we say that the public thinks, we mean only that the citizens think; and when we say that the public holds this or that opinion, we mean that the majority of the citizens hold the opinion. The opinion, again, is not something composed of shreds of private opinion, but it exists complete in each individual mind. The same considerations apply to the notion that the body thinks. This can only mean that the elements, which compose the body, think, and this, again, can only mean, not that my complete thought and feeling is divided among the elements, but that each one of the elements reproduces

in itself that complete thought and feeling; just as public opinion is not split up among individuals, but is reproduced in completeness by each individual. So, then, to explain my mental life, instead of positing myself as a substantial ego, and as the subject of my mental life, I posit a myriad of substantial egos, each of which must be able to say, I think, I feel, etc.

And with all this abundance of mental subjects, my own mental life is not yet explained; for I myself feel and think as well as the elements. My mental experience is my own and not the elements'. Now what is this particular self which reveals itself in my experience? The elements may think and feel, but their thinking and feeling do not explain mine, any more than the thinking and feeling of fifty men explain the thought and feeling of a fifty-first. But the problem is to explain my thinking and feeling, and not the hypothetical feeling and thinking of the elements. It is easy to see that no interaction of separate minds could produce the phenomenon of a new mind, or could produce thoughts which should not belong to the individuals; but when the same problem is proposed for solution by the atoms, the mystery which surrounds the matter inclines us to overlook the fact that thought is indivisible and must always have a subject; and hence we think that something may be done in the latter case which would be absurd in the former. No monist would claim that when a certain number, n, of the elements combine in a brain, they produce a new element as the subject of the mental life; but so long as they decline this view, they leave my thought and feeling unexplained. There is no way out of this difficulty but to deny my own thinking and feeling, or to admit that there is some one element which I call myself, and which is the substantial subject of my mental life. But along with this admission vanishes all need for the extravagant and useless theory that each of the elements is a thinking subject.

The view to which we have objected, in the last paragraph,

rests largely upon the fancy that an aggregate can do something for which the components are not responsible; and this again rests upon a certain sense-bondage which more or less enslaves us all. As we think under the form of subject and attribute, we treat every object of thought as a unitary subject. Hence, thought often attributes a factitious unity to its objects. The mass, the crowd, the aggregate, the sum, are all treated as units; and thus their true character is overlooked. Even when we recognize that their unity is only in our thought, or that, in reality, they are a collection of individuals, we still tend to treat the action of the mass as a unit, and not as only the resultant of the individual activities. But this is a mistake. The elements may act differently in different combinations, but whatever they do, it is the elements in combination which do it, and not the combination itself. The latter is, and does, nothing. The action of a mass is only the integral of the actions of the components, and exists as a unit only in our thought. We treat it as a unit in our calculations, but all the while we know that it is a sum. No matter what the nature of the combination may be, whether physical or chemical, this result holds. So long as thought and feeling demand a subject which thinks and feels, it is impossible to escape admitting a single and substantial subject of the mental life. A compound subject can exist only in thought; in fact, its components are the only realities.

But after all, it will be urged, may not several agents conspire to produce an effect which is perfectly simple, but which is nevertheless the resultant of their combined action? All the elements in the earth conspire to set an unsupported body in motion. The conspiring activities are many, but the resulting motion is one and simple. Now if such a motion should become self-conscious, it would doubtless conclude that its cause must be one. By no amount of analysis would it detect any trace of the myriad original impulses which unite in producing the motion. Why may

we not, then, consider the ego, which seems simple, as really the product of many conspiring activities? We answer, in the first place, that this view reduces to a denial that thought and feeling must have a subject. The ego, which seems to act and feel, is really only the way in which the activities of the elements appear. Nor does it tell to whom these activities appear. If we say they appear to the ego itself, that is to say that the activities of the elements appear to the activities of the elements, which is sheer nonsense. We must never forget that an appearance is impossible without something which appears and something to which it appears. We cannot make the ego an appearance without positing another ego to which it appears, and so on until we get tired. But the necessity of the ego can never be transcended. In the next place, the objection proposes something quite unintelligible, that is, to view our thoughts and feelings as compounded of the activities of the elements. But the activities of the elements are nothing but their mutual determination to some specific state; they are nothing which can exist apart from or between them. The imagination that force is an airy something which can leave its subject and exist separately is at the bottom of this view. And, finally, the objection is cancelled by the illustration on which it rests. The conspiring elements do not produce effects in the void, but in a body to be moved. The motion which is supposed to be conscious is not a self-existing motion, but the motion of something. The fact that this reflecting motion could not find in itself any traces of its external causes, would in no way affect the truth that the motion has a single and real subject. When all these points are remembered, the illustration loses its significance. The elements act not on the void to produce thoughts, but on the mind; and these thoughts, when produced, are the acts of the mind itself. It may be that the external ground of a mental state is plural, and that the state itself shows no trace of this plurality; but none the less is the subject of

that state one and indivisible. We conclude, then, once more, that if thought must have a subject, that subject cannot be any aggregate whatever, but must be a single agent.

The nature of an aggregate makes it impossible to view it as a true subject or agent. We next point out that the nature of thought and consciousness makes it impossible that they should exist without a truly unitary subject. The materialist and empiricist commonly assume that thought and consciousness can exist as passive states, or as simple affections of sensibility, whereas they both alike exist only through a mental activity of distinction and comparison. Thinking consists in relating, and depends on discrimination and comparison. This doctrine has been elaborated at greatest length by Prof. Ulrici, but, oddly enough, Prof. Bain also insists upon it as fundamental. To think, we must discriminate. We must first distinguish any affection from the self, and must then relate it to the self as our own. We must also distinguish the various objects of thought from one another, and must then bind them together in relations. But in order to do this, the subject of the relating act must be in the strictest sense one. If one subject should think one member of the relation, and another subject should think the other member, no relation and no distinction could be discovered or established. Relation is impossible except as the related objects are grasped and compared in the unity of the same act and agent. Without this unity, premise and conclusion would fall hopelessly asunder, and the possibility of thought would perish.

The same is true of consciousness. This also exists only through acts of relation, and hence only through the unity of the subject. A consciousness which should grasp only the present state would be no consciousness at all. The consciousness of an instant is a vanishing quantity; and if there were no means of summing up many states into one, consciousness would perish as fast as it is born. The fleeting state must in some way be fixed before consciousness

is possible; and this can be done only by an abiding subject which gathers up into the unity of its existence the states which else were lost. In any act of consciousness we find a composite of this kind. Present states, remembered states, imagined states, all enter into a single phase of consciousness. But these fall hopelessly asunder, except as they are the states of a common subject. At this point both materialist and empiricist commit a grave oversight. They both speak of consciousness as a series or succession of states, and never raise the question how a series is possible, or how succession can be known as such. Succession can be known only by something which abides. We must be able to contrast the passing with the abiding before succession can be recognized. Hence, a consciousness which was only a succession could never be aware of itself as such. Moreover, succession is not a series. That things should really follow one another would not constitute them a series. They form a series only as the members of the succession are grasped in one and the same thought. The necessary condition, therefore, for the existence of a series is, that one and the same being shall grasp all its members in one thought. If the subject were composite, the series or the succession could never be known to exist. Hence the many can exist, as such, only for the one. Apart from the unifying thought, the many is but a repetition of the individual. It is not number, but the unrelated unit repeated, and it becomes properly plural only in thought. Hence we say that not merely our consciousness of unity, but much more our consciousness of plurality, is impossible without the strict unity of the thinking subject. It is often claimed that the unity of self is given in consciousness, and indeed this is not far from the fact. But the materialist claims that this consciousness is delusive. We reply that consciousness of any sort is impossible without the unity of the conscious subject. This is demanded not merely by the consciousness of unity and identity, but still more by the consciousness of plurality and

change. It does not follow that we are unitary agents because we appear to ourselves as such, but because we appear to ourselves at all.

We pass next to the fact of memory. This is one of the capital facts of our mental life, and demands explanation. Now, physiology teaches that the body is incessantly changing, but none the less does the personality remain unchanged. I am the same person that I was years ago, and I now recall the events which then happened to me. Here is another fact which every theory must explain. Spiritualism explains it by saying that the soul is a substantial subject which has existed through these years, and which is able to gather up its parts and carry it with it. Materialism rejects this view, but none the less must it account for the fact. There is memory; what remembers? Consciousness says I, the abiding person, remember; but materialism says, there is no abiding self. What, then, does remember? Sometimes it says, the brain remembers; but this we cannot allow, for the reasons recently given. If the brain remembers, that can only mean that the elements which make the brain remember. But the elements in the brain to-day are not the elements which composed the brain a month or a year ago. And yet these elements, which now appear here for the first time, have, somehow or other, got possession of my past mental life. Here is a capital fact. The materialist has to explain it. Here is the passing stream of atoms, but here is the abiding person. The atoms which had my past experience have gone, and we should suppose they would have carried the experience with them. But, strangely enough, the experience has remained, and these new atoms know all about it. Did the passing atoms whisper it to the new-comers as they slipped out? Were they able to give a kind of password or countersign as they went away? And were the incoming atoms able so to improve the hint given that we should never dream of the change? But this would be to turn science into sheer fetichism, and to invoke magic

as an explanation. No one can seriously believe that any thing of the kind takes place. Yet here are the elements which, by hypothesis, are here for the first time, and yet they have with them the whole of our mental life. The materialist must give some explanation.

To escape these whimsical implications of his doctrine the materialist often resorts to an illustration. He will not allow that the elements remember, but there is remembering without anything which remembers. In a sense, he says, the body remembers its past experience. In particular, scars abide across all bodily change, and never wash nor wear out. Here we have a case of physical memory. Unfortunately, this is only a figure of speech, and the illustration fails to illustrate. If the scar were conscious of itself as a unitary, thinking subject, and an abiding personality, then the illustration would be pertinent. Until we have some ground for regarding a scar as a conscious ego, we shall reckon this illustration among the superficialities which, like a clinging curse, seem inseparable from materialistic reasoning. In fact, a scar is not ontologically the same for any two consecutive instants; but, like a river, has its identity only in the mind of the observer. The same is true for the claim that the identity of the personality rests on the identity of the body. In a proper sense, the visible body has no identity. As Leibnitz long ago pointed out, we know of only one case of true identity, and that is the case of the conscious spirit. This is the type of all unity and identity to us, and we know of no other. Now if we allow the existence of a unitary soul in connection with the body, the facts of memory become clear and luminous. If we deny it, they are utterly opaque and unintelligible. The mental life falls asunder, and becomes merely a magical illusion.

But this is not the end of the difficulty, and a more heroic treatment is necessary. As materialists, we must allow that memory, like all mental acts, is a function of matter, and, hence, that precisely similar bodies must have precisely sim-

ilar memories, no matter what their past history may have been. If we had an exact reproduction of any body whatever, we should have also an exact reproduction of the person. All the memories, doubts, difficulties, expectations, likes and dislikes, knowledge and ignorance of the real person would be perfectly reproduced. Memory, therefore, has no relation to time. It is only a peculiar phase of mental action, and the distinction of past and present is delusive. To many this view will seem distinctly absurd; but, at all events, consistent materialism is shut up to it. Any theory which makes the mental life depend entirely on the form or mode of combination of the elements is forced to deny that memory has any relation to time, but is only a special form of mental illusion. We do not remember experiences as past because we really had such experiences, but because the brain is in a certain state. Nor can we get relief from this conclusion by saying that the brain itself is produced by past experience; for we can know nothing of a past experience except by trusting the report of memory as to personal identity, and this the theory makes impossible. In addition to all these bizarre difficulties, we must add that memory itself, like thought, demands a relating and discriminating activity. The simple recurrence of a like experience is not memory. The experience must be recognized and located before it becomes an act of memory. Hence we must say that memory, thought, and consciousness are alike impossible without a unitary subject.

It is a long time since we heard from the relativist or phenomenalist; it is, therefore, no surprise to find him objecting at this point. This conclusion, he insists, though true for phenomena, is not true for noumena. The ego as it appears is indeed the unitary subject of the mental life; but this fact allows no conclusion as to the unity of the noumenal ego. A first remark in reply would be, that if the unity of the ego in experience does not warrant us in

concluding to its substantial unity, still less does it warrant us in concluding to its composition. A thing must always be allowed to be what it seems unless reasons can be given for going behind the appearance. But the true answer to the objection lies in a fact dwelt upon in the Introduction. We there saw that the question, What is being? reduces always to this other, How must we think about being? The ego as we know it is the only ego there is to know; and the only question which can arise concerning it is, How must we think of it? We insist that in the face of all the facts we must think of it as one and not many, as simple and not compound. Objections to this conclusion must take the form of showing that the facts can be otherwise interpreted in articulate thought. Objections based on the phenomenality of human thought rest at bottom on the crude fancy that there may be some form of thought which can grasp reality otherwise than by thinking of it. This style of objection dates back to Kant. In order to carry through his phenomenalism of thought and knowledge, he denied the possibility of concluding from the unity of the ego in consciousness to its unity in being, alleging that if such a conclusion were allowed, it would overturn his entire criticism. But this reason was purely personal, and has no value in logic. Indeed, unless we are allowed to infer from phenomena something concerning the nature of noumena, the noumena must disappear entirely as not accounting for anything. They are not revealed in phenomena. None of the laws of thought apply to them. They come under none of the categories. They are utterly gratuitous. Such was the conclusion which Fichte drew, and such is the conclusion which reason necessarily draws from any theory which will not allow that noumena are truly revealed in and through phenomena. But Kant's regard for his system led him to use extremely feeble arguments in his criticism of rational psychology. He insists strongly upon the unity of the empirical ego, and on the "synthetic unity of apperception," as a

necessary condition of consciousness; but he disputes the speculative conclusion that the transcendental ego must be a numerical unity. Unfortunately, the nature of this empirical ego, and its relation to the transcendental ego, are left very unclear. If we say that the empirical ego is the form under which the noumenal subject appears, the question at once arises, To whom does the empirical ego appear, and what recognizes the appearance? There can be no appearance without something which appears and something to which it appears. If the ego is the appearance, what is the ego which perceives it? If it be said that the empirical ego is but the aggregate of conscious mental states, we must know the subject of these mental states. It cannot be the empirical ego, for that is the states themselves; and it would be quite absurd to speak of an aggregate of states as its own subject. If we should push these questions, it would at last appear that the transcendental ego is not something lying beyond all consciousness and knowledge, but is simply that substantial self revealed in consciousness and thought as one. Besides, as we have pointed out before, the unity of the ego is not affirmed because we appear to ourselves as units, but because we appear to ourselves at all. The unity of the true ego is necessary to the existence of any mental life.

But, says Kant, the unity and identity of the subject does not prove the unity and identity of the substance. He nowhere attempts to show how an aggregate can give rise to a unitary consciousness; but he uses an illustration to show how identity of the subject might be combined with non-identity of the substance. When an elastic ball strikes another of equal mass, the motion of the former is transferred to the latter. He speaks of this as one body transferring its state to another. In the same way, he suggests, a mental substance might transfer its entire consciousness to another. The consciousness being thus passed along from one to another, the subject would remain identical, while the substance would be incessantly changing. Kant was

doubtless led to this strange notion by his anxiety to ward off all attempts at ontological knowledge; but whatever its ground, and however great Kant's genius, this is certainly a case where good Homer nods. For, in the first place, states are incapable of transfer except in a figurative sense. The moving ball does not transfer its motion, but sets another ball in motion. Kant adopts here the crudest possible conception of inherence, and speaks as if states, or attributes, could be loosened from their subject and transferred bodily to something else. The subject appears as the bearer of properties instead of the agent which, by its activity, founds properties. Hence the idea of a bodily transfer. This notion we have transcended. The only possible conception of his illustration would be that one substance might by its action on another cause that other to assume a mental state like its own, so that it should seem to itself to have had a past experience when it had not had it. The tenability of this conception would be another thing. It posits a magical, if not an absurd, process to explain a fact which admits of far easier explanation. It indulges in gratuitous scepticism after the fashion of Descartes, with his hypothetical devil, who may be making fools of all of us. But we must never forget that the materialist is not justified by making assumptions which admit of no refutation; he must rather show that his views offer the simplest and most rational account of the facts. But this notion of a transmitted consciousness is a gratuitous violation of appearances instead of their explanation. Moreover, it fails to do what it is invented for. For, in the case supposed, there would not be a single and identical mental life, but a number of similar mental lives, each of which has its unitary subject. There would be much that is magical in such a view; but the point in dispute, the unity of the being, is admitted. If, however, the mental subject, the conscious, active ego, is passed along, it would by hypothesis be the same mental subject after all. The ego, the personality, would not change, but only the

unknown and inactive substance. But this substance is a myth. Here appears a crude notion of substance in Kant's view. He views it as a mysterious substratum, whereas substance and subject, or agent, are identical. We have repudiated the substratum-notion as the product of sense-bondage. That which can act and be acted upon is the essential idea of substance. When, then, we have found the mental subject, we have found the mental substance, for subject and substance are identical. Kant's admission of the necessary unity of the mental subject is all we ask. The mental subject is all we recognize. We admit no substance behind the subject and outside of knowledge. The ego which thinks, feels, and acts is all there is to know; and for us the fact that the ego knows itself as the subject of its acts, and as one in the unity of its consciousness, together with the further fact that this unity appears on reflection as the absolute postulate of the mental life, is the highest possible proof of its unity and reality. We must repeat the conclusion reached in our ontological studies, that a thing is to be viewed as real and substantial not because it has a kernel of substance in itself, but because it is able to assert itself in activity. Things do not have being or substance, but they act, and by virtue of this activity they acquire the right to be considered as existing. In like manner the soul has no being in it; but it knows itself as active and as acted upon; and in this fact and knowledge it has the only possible mark of reality.

The impossibility of accounting for the capital facts of the mental life without a unitary subject is palpable. No interaction of elements, however mysterious or subtle they may be, can produce our mental life. The uncritical imagination is, of course, much impressed by the excessive fineness of the elements, and by the darkness which surrounds brain-physiology; and this darkness and mystery pass for argument. Why the fact that we know little about the brain should lead us to conclude that it must be able to ex-

plain thought, is one of the mysteries of materialistic logic. But the question as to the reality of the soul does not depend on brain-physiology at all. The question turns on the nature of consciousness and on the impossibility of producing the one from the many and the identical from the numerically changing. So long as these ideas are hostile and mutually exclusive, so long will materialism be impossible as a rational theory. As a volition, of course, any superstition or absurdity is possible.

We have before said that monism may take another form, in which mentality and materiality appear as opposite sides or faces of the same being. This is pure monism, while the theory we have been considering is rather all-alikeism. We have next to consider the relations of this view to the substantiality of the soul. We shall find the same difficulties reappearing.

Spinoza's system is perhaps the purest specimen of monism of this type. In the Eleatic school the debate was entirely about being; and the relation of thought to being was overlooked. Hence the Eleatic monism, though perfectly pure, obtained this purity only by ignoring the side of thought altogether. In Spinoza's system we have an attempt to found materiality and mentality in the same subject and as equally original principles.

Spinoza starts with the conception of an infinite substance with an infinity of attributes, of which thought and extension are only two. In the progress of his system, however, the infinity of attributes is dropped, and attention is directed entirely to thought and extension. This was partly due to the fact that the other attributes are unknown and feigned quantities, and, as such, are empty of any affirmation. It was, perhaps, also due to the insight that, in any case, the thought-attribute must necessarily constitute one half of the whole. All those attributes which cannot be represented in thought are beyond all knowledge and affirmation. Hence

every real attribute must also have its ideal side; that is, it must fall under the thought-attribute. Even extension itself, though the antithesis of thought, must still have a relation to thought, or it could not be represented in thought. Hence, as the thought-attribute must always be half of reality, it was desirable that the attribute of existence should comprise the other half. And thus it came to pass that, finally, Spinoza seems to consider thought and extension as comprising all reality.

But, in this monistic theory, thought and extension do not explain each other, but are posited side by side in the same subject. The physical world, in itself, neither explains nor implies the thought-world, but both are the opposite faces of the same being. This admission leads to some peculiar difficulties. In the theory which seeks to deduce thought from matter and motion, the great difficulty is to see how moving atoms can produce thought, or do anything but move. We have abandoned this theory for another, which posits life and thought in matter, to be evoked under the proper circumstances. But, as the facts of perception demand a parallelism of the order of thought with the order of things, our new theory is called upon to explain this harmony. According to Spinoza, the movement of thought is determined only by antecedent thoughts, and the movement of things is determined only by antecedent physical movements. Thus the thought-series and thing-series appear in absolute independence of each other, and, to save the reality of knowledge, we are thrown back on the assumption of an utterly opaque harmony between two independent series. Neither would contain any ground for the existence of the other. But, in that case, it would go very hard with the unity of the substance. We have two series of manifestation going on in mutual independence and indifference. Indeed, Spinoza's conception of the relation of attributes to the substance is quite incompatible with the unity of the substance. Descartes viewed the attribute as expressing

the essence, and hence he regarded it as a contradiction when incommensurable attributes are affirmed of the same thing. Spinoza, however, with the same conception of the attribute, still sought to secure unity by making the substance one. But this monism is only in seeming. By an act of philosophic violence we have forced incommensurable attributes together, and have resolved to call them one. But the dualism remains deep and ineradicable.

Spinoza was not unconscious of this difficulty, and at times inclined to the doctrine that the attributes are only our way of looking at things. The differences are not in the thing, but in the conception. Hence the same series viewed from one side appears as physical, while on the other side it appears as mental. In this case, there would be only one series, and hence no parallelism to explain. In this doctrine we have a glimpse of Kant's theory. Indeed, traces of Kant's theory appear throughout speculation. The glory of Kant is by no means that he, first of all men, conceived that thought might modify its objects, but that he first made it a definite principle, and consistently and systematically applied it.

But Spinoza's attempt to escape the difficulty is a failure. If being in itself be strictly one, why should there be two ways of looking at it? On his theory, the double view is as hard to explain as the double fact; and, indeed, it cannot be explained without implicitly assuming a corresponding doubleness in the fact. But this is not the chief difficulty. The view itself is unclear. Taken in earnest, it implies that thought and extension do not correspond nor attend each other, but that each is the other. And not even this would be true, for both thought and extension would have only a subjective existence. The objective fact would have no attributes; it would only be that transcendant unity which appears to us under the forms of thought and extension. But this would be a complete abandonment of his starting-point, and Spinoza never pushed his subjectivity of thought to

this extreme. Such a view, also, would rescue the mind from a position of passivity, and exhibit it as a transforming agent, which gives to being its essential properties. No doctrine of relativity is compatible with the passivity of the knowing mind. There is, then, a thought-series, and there is a thing-series, and their parallelism remains for explanation. If, now, we allow that they are opposite faces of the same fact, we are met by the difficulty that the physical movements are said to be physically determined, and the thought-movements are said to be logically determined. But the laws of motion and impact are quite distinct from the laws of thought; yet, on the theory of the opposite faces, they must be identified, or one must be abandoned. If physical laws really determine physical movements, then the thought which accompanies them is really determined by physical laws also. Conversely, if the movements of thought are determined by the laws of thought, or the inner order of reason, then the physical movements which accompany it are really determined by reason, and the physical determination is only in appearance. To make thought determined by physical laws and movements would lead at once to the overthrow of reason, as we shall see. On the other hand, to make thought the independent series, and physical movements only its phenomenal attendant, would be to leave our starting-point, which made the physical and mental series co-ordinate and parallel. The only alternative is, to say that physical movements are not physically determined, and that thought-movements are not rationally determined, but that both thought and extension are the phenomena of some transcendent being, and are determined by some ineffable processes in that being, which processes, moreover, are in inexplicable harmony. But, even then, we are not in peace. The notion of phenomena implies a conscious mind as the condition of phenomena. Hence we cannot make mentality and materiality phenomenal without positing a conscious subject for whom the phenomena exist.

The notion of a harmony or correspondence between the two series has the same implications. A harmony between things can exist only for a subject which embraces both the harmonious members. In order, then, that this harmony should be spoken of, there must be a subject which transcends both series, and by transcending unites them. As long as the thought-series is separated from the thing-series, it is impossible to bring them together, except in a consciousness which embraces both. Throughout this entire speculation we miss the conscious subject for whom thoughts and things and their harmony exist.

Indeed, the entire monistic speculation, in whatever form it appears, is the victim of a curious self-forgetfulness. The monist speaks incessantly of thought as a phenomenon of matter, and overlooks the fact that there must be a conscious subject before phenomena can exist. Most of his doctrines imply the existence of mind to make them intelligible. The common form of stating the materialistic doctrine—namely, that mind is phenomenal—is a pure contradiction in psychology, because mind is never a phenomenon, but the necessary condition of phenomena. And, through oversight of this fact, the monist always seeks to find thought and consciousness among their objects, where, in the nature of the case, they can never be. And, because they never appear among the objects, the monist concludes that they are non-existent. But mind, as the knowing subject, can never be found among its external objects. In this respect, it is like vision, which gives us all objects, but never gives us itself. And the monist who concludes to its non-existence is like a physiologist who should so lose himself among the objects of vision as to forget, or even deny, that there must be an eye in order to vision. The mind is the eye, which sees, and, of course, cannot be found among the things seen. But this the monist incessantly forgets, and, after he has looked through the list of objects which the mind has given him without finding the knower among them,

he forthwith proceeds to deny the knower. If, in addition, he has looked carefully through the brain, and caught no glimpse of the mind, he becomes fixed in his denial. Thus the order of fact is inverted. The real is made phenomenal, and the phenomenal is viewed as real. Of all the extraordinary delusions which have ever possessed the human mind, this is the most extraordinary. Overlooking the necessarily antithetical nature of subject and object, the subject looks for himself among the objects, and, confounded by the failure to find anything, overlooks and denies himself entirely. The knowing self—which is the primal reality in knowledge, and the only reality of which we have proper consciousness—is denied, because it will not consent to become a phenomenon, although, in the nature of the case, it never can do so. The same oversight underlies Spinoza's attempt to construe the thought-series and the thing-series. Thoughts are viewed as things, and the construing and comparing process, which is the very heart of the matter, is totally overlooked.

Spinoza's monism makes thought coexistent with extension. Modern monists, with a few exceptions, are not inclined to go to this length. They hold that the world-substance, while it appears everywhere and always as extended and material, does not appear everywhere and always as mind. The physical series is regarded as the original and independent fact, and the mental series is conceived as entirely dependent upon it. To be sure, the mental series is spoken of as an inner face of the physical series, but the ground of movement is in the latter. It summons the mental series, and determines its order and on-going. To such an extent is this the case, that many expositions of the doctrine fall back into common materialism, and seek to deduce the mental series from the physical series. Sometimes by the aid of an inflated terminology, and sometimes by mathematical formulas and diagrams, it is sought to show how, in the crossing of force-currents, consciousness must arise.

Many profound things are said to show how, in the incessant weaving and unweaving of persistent force, thought and feeling must be produced. The latent mentality of all being must be integrated in the concentration of force, and, by integration, must acquire intensity sufficient to rise into distinct consciousness. But neither this, nor the Spinozistic form of monism, succeeds any better in explaining my own thought and the unity of the ego than did the atomic forms. If the infinite has thoughts and feelings, they belong to the infinite, and not to me, and are, therefore, no explanation of my thoughts and feelings. The notion of a universal thought-existence, out of which particular thoughts are made, as various garments are cut from the same piece of cloth, is an untenable fancy, and one which no rational being would hold upon reflection. Thought itself is an abstraction; the reality is, always, particular thoughts. The notion of an indefinite thought-stuff, which admits of integration, implicitly assumes the materiality of thought, and results from the fancy that thoughts may be found among external objects. But thoughts are acts, and not stuff or material. As such, they must have a subject. My thoughts demand a subject, and that subject is myself. Whatever movements there may be in the world-substance, and whatever currents and eddies, etc., there may be, I know myself, as a thinker and an agent. As such subject or agent, I am substance, in the only intelligible sense of that word. It should further be added, that this notion of currents and eddies and expansions and contractions in the world-substance are all products of the imagination, and are without any significance for thought. They are only attempts to picture what, on any theory, must be essentially unpicturable.

The conclusion is, that the soul cannot be viewed as the result of any amount or kind of combination. As a unitary agent it cannot be compounded but must be created; that is, it must be viewed as a new factor introduced into the system by the infinite. And even the monist should find no

fault with this view. It can be obnoxious only to the crude materialist, who regards the physical elements as the primal and basal reality; and this view we have seen to be untenable. We have pointed out, in speaking of the relation of the infinite to the system, that the order of the system is no matter for apriori speculation. We pointed out that, if we view the physical elements as evolved from the infinite, it is infinitely improbable that they should all have been evolved at once. They must be viewed as having the ground of their appearance and of the order of their appearance in the peculiar demands of the infinite itself. There is, then, not the slightest reason for affirming that the number of the elements is invariable. What, then, the evolutionist must admit as possible for the physical elements, cannot be viewed as inadmissible for psychical elements, if the facts seem to call for it. The Infinite is in immediate contact with the system. He is its basal factor. What his nature or plan calls for, that is done. If it call for the appearance of new factors, they appear. If it call for the disappearance of old factors, they disappear. This, we say, is a necessity of every system. The attempt to construe a system out of independent self-existent atoms we have seen to be a hopeless failure. The basal one must be admitted, and it must be admitted to be the source of all law, manifestation, and on-going. Hence, in any system the nature of the infinite appears as the all-determining factor. But that which is to be viewed as an assumption, which every system must make, cannot be regarded as peculiarly obnoxious in ours. We have found ourselves forced to view the infinite as free and intelligent, and his causality we have regarded as the causality of will. His activity, therefore, is purposeful; and its direction is determined by his plan. And as we find factors in the system, which we can view only as new beginnings, we look upon that plan as including the introduction of new factors upon occasion. The only difference between our view and any possible monistic doc-

trine is, that while the latter would view the new factors as the outcome of a blind necessity, we regard them as the outcome of purpose.

Thus far we have considered the possibility of explaining the mental life without the assumption of a unitary and substantial soul as the subject of that life; and we have found that all forms of materialism and monism are hopelessly incompetent to explain the most patent facts of our mental experience. We might, then, dismiss them as untenable without further inquiry. But a theory may be tested in two ways: we may treat it as an hypothesis to be proved; and then we compare it with the facts and see if they call for it. Or we may assume it to be true, and deduce its consequences, and compare them with known facts. Having applied the first test, we shall find it of advantage to apply the second. We have, then, to consider some of the outcomes of materialistic monism, and especially its bearing upon the validity of knowledge itself. It is manifest that a theory which leads to the overthrow of knowledge commits suicide, and can lay no claim to acceptance.

We have previously pointed out that the materialistic doctrine of the relation of the thought-series to the physical series is essentially unclear. The materialist cannot allow the mental series to be independent of the physical series; for this would be to abandon his monism and surrender his own theory. No more can he allow the mind to be a real and active something; for this also is contrary to the hypothesis. In some way the mental series must be made to depend on the physical series; and this can be done only by teaching the materiality of thought, or by making thought a powerless attendant upon the physical series. The latter course is the one generally adopted. The physical series is viewed as going on by itself, and as subject only to the laws of force and motion; and the mental series is simply the subjective shadow which the physical series

casts. As such they contribute nothing and subtract nothing. A shadow effects nothing; and, in turn, no energy is expended in making it. The physical series is not affected from without, and nothing is drawn off from it to make thoughts and feelings. Hence, the presence and movement of the mental series is determined by the physical series, just as the presence, form, and movement of a shadow are determined by the body which casts it. The existence of any thought or feeling is due to the general form of nervous action. The existence of this or that particular thought or feeling is due to specific peculiarities of nervous action within the limits prescribed by the general form. This independence of the physical series Prof. Clifford has very pithily expressed by declaring that it "goes along by itself." The powerlessness of the mental series has been sharply stated by Prof. Huxley in his lecture "On the Hypothesis that Animals are Automata," where he says that he knows of no reason for believing that any mental state can affect any physical state, and adds, It follows "that, to take an extreme illustration, the feeling we call volition is not the cause of a voluntary act, but the symbol of that state of the brain which is the immediate cause of that act." The general view has been wrought out at great length by Mr. Spencer in his "Principles of Psychology," where, along with many bewildering remarks about opposite faces of the unknowable, he represents the mental face as completely determined by the physical face, so that memory, reflection, reasoning, and consciousness in general are only the subjective shadows of molecular changes in the brain, or of what he calls nascent motor excitations. Mental movement of every sort is due, not to any self-determination of reason, but to the nervous mechanism; and this, in turn, is subject only to the laws of molecular mechanics. The coexistence of ideas means the coexistence of the appropriate nervous states. The comparison of ideas means the interaction of these states. A conclusion, or a choice, means that one nervous

set has displaced another nervous set. The processes of logic represent no fixed and necessary order of reason, but only the subjective side of a conflict among nervous states. A conclusion actually reached, or a view actually held, represents no fixed truth, but only the superior strength of the corresponding nervous combination. Truth in any case is only a nervous resultant, and depends upon the nerves. There is, indeed, much that is absurd in this view; but it is the current view among materialists. We have to inquire into its theory of knowledge. The investigation will aid us in judging the doctrine.

We point out in the first place that we reach the thing-series only through the thought-series. We know that there are things and what they are only through thought. Hence, while the thing-series may be first and fundamental in the order of fact, in the order of knowledge the thought-series is first. A first question, then, would be, What warrant is there for affirming any thing-series? Why may not the thing-series be after all only a phase of the thought-series? From Hume to Spencer, the thing-series has been defined as a series of vivid states of consciousness, while the ego is a series of faint states of consciousness. But, vivid or faint, this definition makes both subject and object states of consciousness; and, hence, both belong to the thought-series. The ego, as a series of states of consciousness, can lead to nothing beyond itself; and the object, as a series of conscious states, exists only in thought. Here is the place where materialism always tumbles into nihilistic idealism whenever it attempts to reason out a theory of perception. It is well known that Spencer, at this point, when his theory was about to collapse into nihilism, saved himself by reinstating the ego as a true agent. In his argument with the idealist the ego acquires a new character. It is no longer a series of faint impressions, or the inner side of nerve-motions, but a true source of energy; and the warrant for affirming a thing-series, apart from the thought-series, is

found in the fact that our energy is resisted by an energy not our own. This is excellent doctrine, but it does not agree with the other doctrine, that the ego is only the sum of mental states, and that mental states affect no physical states; for it makes our own consciousness of effort and energy the turning-point of the entire debate between the nihilist and the realist. It saves realism by surrendering materialism; and nihilism can be escaped in no other way.

We pass to another point. All arguments for the sufficiency of matter assume a valid knowledge of matter. That X is adequate or inadequate is a proposition which admits of no discussion. It is, then, a matter of interest to know what warrant there is for affirming that the thought-series rightly represents the thing-series. The general fact that the latter determines the former in no way implies that the latter must determine the former so as to correspond with itself. If an organism be able to generate thoughts, it by no means follows that the thoughts must represent external reality. The thoughts might be as subjective as the fancies produced in dreams. One would expect that the thoughts would represent, if anything, the organic processes of which they are said to be the inner face; whereas they never refer to these, and commonly refer to things entirely apart from the organism. Nervous combinations and movements are said to have ideas for their mental face; and the natural thought would be that those ideas would be ideas of their peculiar nervous correlates. But this is never the case; indeed, that there are such correlates is even now a matter of not very cogent inference. This complete silence of the organism as to what is going on in itself, and the report instead of what is taking place in the outer world, are very remarkable facts. Certainly, when matter is declared to be a double-faced entity, we should expect to find the mental face reflecting that part of the physical face which attends it, or which is next to it; but the mental face never reflects the physical series which produces it, but some other and

unconnected series. Thus a set of rays of light fall upon the body and a thought results, but not a thought of the nerve-processes, or molecular motions which produce the thought, but a thought of some external luminous object. It is strange, indeed, that anything should result, but that the thought should be a reproduction of the object is surprising in a far higher degree. The wonder is still greater in our perception of others' thoughts. Here some waves of air fall upon the ear, and at once the nerves produce thoughts with the added assurance that they are the reproduction of a thought-series which exists apart from our own. We can now understand the problem. If knowledge is to be possible, the mental series must rightly represent the physical series and all other mental series; but what ground is there for affirming that they must correspond? This particular problem has not received the attention from materialists which it deserves. In general, they have never considered the problem of knowledge at all, but have taken the crude theory of common-sense for granted. But the problem is a real one, and demands a solution. And for the materialist there is no solution possible, except some debased form of the pre-established harmony. He must assume not only that matter in general is capable of generating thoughts, but that it is shut up by its nature to the generation of thoughts which correspond to the outward fact. He must even assume that bodies are so related to the universe as to be under obligation to generate correct thoughts about things in general. Many have sought to escape this conclusion by appealing to agnosticism; but materialism will not unite with this view except as a dogmatic affirmation. The entire proof of materialism rests on the assumption that we have a valid knowledge of matter. The thought-series, then, must correspond to things; but why? The only answer is that matter is such that it must produce true thoughts; but this is simply to reaffirm the fact. This theory is far worse than Leibnitz's pre-established harmony.

Leibnitz found some reason for the harmony in the fact of its pre-establishment; but the materialist has simply to assert it as an opaque fact.

Still the problem has not been entirely unnoticed. Notably Mr. Spencer has sought to account for the harmony in question by a theory framed from natural selection and heredity. According to this view, there is no original need that matter should think rightly; but if any organism should think wrongly, it would soon collide with reality and perish. Right thinking, therefore, is necessary to continued existence. Natural selection must tend to pick out the sound thinkers from the unsound; and by heredity their tendencies will be integrated and transmitted. The final result will be that thought will at last be adjusted to things, yet without any reference to an opaque and uncaused harmony.

The ingenuity of this view is wonderful; still more so is the uncritical faith which can receive it. For since thought has no effect on physical processes, it is hard to see what effect for good or evil thought can have. The survival of the organism is a purely physical matter, with which, by hypothesis, thought has nothing to do. There seems to be here a trace of the antiquated notion of self-control, according to which our knowledge determines our course. In a system of freedom the theory would have application; but when thought is only the powerless shadow of reality, its misadjustment is insignificant. In this theory, the destruction of the organism is not due to a maladjustment of thought, but to a maladjustment of the organism. The organisms which perish are not those which think wrongly, but those which cannot maintain their equilibrium with the environment. But there is nothing in this which implies that those organisms which are in equilibrium with the environment must produce true thoughts of the environment. The crystal maintains itself against its surroundings by virtue of its physical structure; but it does not follow that if a crystal should have thoughts they must reflect the sur-

roundings. But why should the same equilibrium imply more in the organism? Why must organisms which can physically maintain themselves think rightly about their surroundings? This they must do if knowledge is to have any validity; but it is hard to find any reason for it. We are forced either to abandon knowledge or else to fall back again on a grotesque harmony between organisms and their surroundings, such that when they take to thinking they can but reflect their environment. But this is Leibnitz's theory of pre-established harmony in its most debased form. Leibnitz was not content to affirm the harmony between mind and its objects; he explained it by its pre-establishment. Materialism degrades it to a physical significance and leaves it unaccountable.

Again, it is very remarkable that the narrow range of the Spencerian principle should have been overlooked. If it were true, it would provide for valid thoughts only as they are related to survival; whereas the bulk of our thoughts have no bearing on survival. A mistake in our theory of double stars or in solar physics would not be attended with any physical disaster. The true theory and the false theory are equally without significance for survival. And since this is the case with the mass of our alleged knowledge, the action of natural selection can never come into play to separate the true from the false. What warrant, then, have we for trusting the report of thought on these things? The uninitiated may be tempted to think that we reach these things by reasoning; but on this theory, reasoning itself is only a function of the nerves. It is but the subjective side of the nervous mechanism; and there is no assignable reason why the nerves should reason more accurately than they perceive. If reasoning were an independent mental activity, self-poised and self-verifying, the case would be different; but the mind is only the sum of mental phenomena; and these phenomena are called up and shifted by the nervous mechanism. Once more, then, what warrant is there

for trusting our nerves? That they should produce thoughts about everything is very remarkable; but that these thoughts should represent the reality is in the highest degree surprising. The mental series, which originally was the subjective face of sundry nervous movements, turns out to be the inner face of all physical series or movements with the one amazing exception of the physical series on which it depends. To retain our trust in knowledge we must make once more the assumption of a pre-established harmony in its worst form. Who would have expected to find the ghost of Leibnitz, in a somewhat degraded state, lurking among the ponderous phrases of the Spencerian philosophy.

Another difficulty with this theory of knowledge is that its appeal to heredity and experience is not clearly justified by the principles of the theory. It is well known that when materialism comes to psychology, it always allies itself with empiricism and associationalism. Thus Mr. Spencer, when he had conducted the evolution of the universe up to the borders of mind, attached the associational psychology to his system, and thus mind was brought into line with all below it. He also apparently greatly increased the resources of associationalism by his doctrine of heredity, whereby a race-experience was exchanged for an individual experience. In this way, the system gained time for its transformations. This is very clear in appearance, but rather confused in fact. For in order to learn from experience there must be something which learns; whereas, on the materialistic theory, the learner is the experience itself. We learn from experience by remembering the past, and deducing principles for present and future guidance. But this is impossible where there is no rational subject which stands apart from the experience and draws inferences from it. Now, according to materialism, we do not have ideas; we are the ideas. And these ideas are not the product of some past experience, but are the outcome of the organism as it is. An organism made at first hand from the inorganic

would have precisely the same ideas, feelings, and recollections. The only way, therefore, in which experience can affect our mental life is by modifying the organism; it can directly teach us nothing. Nor is it in any sense our mental experiences which modify the organism; these, by hypothesis, are powerless. And the mental manifestations of the organism are in no sense learned from experience, but are the expression of what the organism is. We may speak of a gradual development of the organism and a corresponding development of mental manifestation; but we cannot speak of experience in the philosophical sense of the word. The same considerations apply to heredity in a materialistic system. Experience cannot be inherited, because no one has it, and there is no one to inherit it. We are the experience; and the experience is the outcome of the organism. The experience from which we are supposed to learn is of course mental experience, and this, by hypothesis, never reacts on the organism. From another standpoint, also, this alliance between empiricism and materialism appears as impossible. The elements from which the materialist builds everything are subject to fixed laws. In all their inorganic manifestations they manifest, not their habits, but their inner nature. Chemical affinity and molecular combination in general are not the outcome of experience, but of the nature of the atoms themselves. We should expect, then, if the elements should ever rise to vital and mental manifestations, that there also would be fixed expressions of what the elements are; not something acquired and adventitious, but something inherent and essential. Indeed, from this standpoint the notions of heredity and experience are grotesquely untenable. The elements have laws, not habits; and they neither have nor inherit experiences. Their combinations also must be of the same sort; and if it be absurd to speak of the complex molecule as forming habits and learning new forms of action, it is equally absurd to speak of organic molecules as so doing; for organic molecules are

simply complex molecules. It is, then, a grave inconsistency when materialism is joined to empiricism, according to which mental manifestation has no fixed and necessary laws, and is a pure product of experience. According to materialism, there is no need of experience for any depth of insight or even for any amount of memory. All that is needed, in order to have a perfect insight into both present and past, is that the appropriate organism be produced. Materialism, then, is compatible only with a high form of apriorism; and the laws of mind have as good right to be viewed as essential and inviolable as the laws of gravity and chemical affinity. This is a somewhat bizarre and unexpected result; but it must be admitted. It is needless to point out that psychological empiricism, when logical, makes materialism as a reasoned system impossible. The union of the two must be regarded as a kind of philosophical adultery. And so we come around to our previous conclusion, that the materialistic theory of knowledge is that of an opaque harmony between the organism and the surrounding world.

We see, then, that natural selection, as a principle of belief, does not escape the admission of an uncaused harmony between the body and the environment. We next recur to a peculiar difficulty, mentioned in the beginning of the chapter, which arises from this principle, if we allow it to be valid. It follows directly from it that no belief can become widespread which is contrary to reality; for maladjusted beliefs must lead to collision with the nature of things and consequent destruction. It further follows that every widespread and enduring belief must correspond to the nature of things. Certainly those beliefs which originated in the earliest times, and which have maintained themselves ever since, must be viewed as having far higher probability than the late opinions of a sect. The great catholic convictions of the race represent the sifting action of the universe from the beginning. They are, therefore,

the only ones which, on the theory, can lay the slightest claim to our acceptance. It is, then, in the highest degree inconsistent when the disciples of this view reject a belief because it is old and reaches back to the infancy of the race; for this is the very characteristic of true beliefs. A belief which has only recently appeared can hardly lay any claim to be considered at all. What, then, shall we do with such beliefs as the belief in God, freedom, the spirituality and immortality of the soul, and the existence of a moral government in the universe? Of course, as materialists, we cannot accept them; but how can we as materialists reject them? The same brain which has ground out the truths of materialism has also ground out these other notions. That they are not fatally maladjusted to the nature of things is proved by their continued existence; and, by hypothesis, they are products of that natural selection whose especial business it is to sift the true from the false. There is nothing to do but to attempt a distinction between maladjusted thoughts which lead to destruction and others which do not. Our thoughts of God and supersensible things are of the nature of dreams. They lie outside of any possible physical experience, and hence they cannot collide with reality any more than could a ghost. Unfortunately, it is not easy to draw this line so as to conserve those physical truths which lie outside of any possible experience, and at the same time put religious and other obnoxious ideas to flight. It is a very grave circumstance that matter should be so given to dream and error. Of course, the uninitiated will think that reasoning will serve our purpose; but reasoning itself is a part of the nerve-process.

Throughout the past, natural selection has favored anti-materialistic views; in the future the same process must eliminate materialism. It is plain that those beliefs which make most of the person and which give one most energy and hope must in the long run have an advantage over

others which are relatively discouraging and depressing. Hence, in the end, beliefs which tend to righteousness and cheerfulness must overcome all beliefs which tend to looseness and despair. The former will tend to conserve the physical and moral health both of the person and of society, and the latter will be in alliance with destruction. If it be said that we here forget our previous assumption that a mental state cannot affect a physical state, we reply that that assumption is not our own, but the theorist's. We do not assume any responsibility for any of these views; we inquire merely into their implications. And since the theorist has introduced natural selection as a determining principle of belief, we inquire whither it will carry us. That this principle does not agree with the other principle, that the physical series goes along by itself, is not our affair. And even if the two did agree, it would be highly unscientific to hold that a change of opinion will have no effect on action. As opinion, of course it would be powerless, but as opinions are only the subjective side of nervous states, it follows that a change of opinion points to a change in the nervous processes, and hence it must lead to change of action. Now, as a matter of fact, the belief in God, immortality, and moral government, has a great value both for personal and social well-being. It is the great source of courage, hope, cheerfulness, and steadfastness in righteousness. And, on the other hand, it is undoubted that materialism, atheism, etc., are relatively depressing and demoralizing. The rapid spread of pessimism among the more earnest of the advanced thinkers is sufficient proof of this. Hence, under the operation of natural selection, the former set of beliefs will have a decided advantage over the latter, and in the end they must conquer. That matter can form the conception of freedom, the soul, and God we know by the fact; hence, they are plainly not repugnant to the nature of matter. The direction which its future thinking must take under the influence of natural selection is plain. Mat-

ter must come at last to a firm faith in the soul, immortality, and God. Of course, the eager objector, carried away by his nerves, urges that believing them would not make them true, but only cherished delusions. It is odd how hard it is for one to master his own theory. By hypothesis matter is capable of valid thinking; and why should we not trust it when it thinks about God as well as when it thinks about the world? We do not insist that it is equally trustworthy; we only ask for some standard whereby one set of thoughts can be ruled out, while another is retained. Of course, we are beyond the point where we fancied that reason itself is such a standard; for reasoning itself is a part of the nerve-process. It does not contain any standard of truth in itself, but comes and goes according to the principles of nerve-mechanics.

As materialists, then, we are shut up to the doctrine of an opaque harmony between thought and thing. But while this doctrine is necessary to save knowledge from one danger, it exposes it to another equally great. In speaking of Leibnitz's pre-established harmony, we pointed out that on that theory we should expect the most exact and consistent knowledge, while in fact the most diverse and inconsistent beliefs are held. The same difficulty meets us here. The theory calls for the most exact and consistent knowledge; and unfortunately we have no such knowledge. How, then, are we to decide between opposing views? The most natural assumption would be that those views are most likely to be true which matter produces most freely; but, sadly enough, the average brain is not so made as to grind out materialism and atheism. Matter in its thinking has a strong tendency towards theism, morality, and the spiritual conception of the soul; and it has even devoted much attention in the past to theology and metaphysics. Of course, these views are false, but how are we to escape them? If the human mind were something which is capable of free reflection, and which develops variously according to its cir-

cumstances, we might account for much variation by the mental environment; but, of course, this is not the case. It is indifferent to a molecule where it is, and it ought to be indifferent to any complex of molecules. In particular, it is hard to see how the organism can be affected by its mental atmosphere. Prejudice and superstition might influence minds; but they do not seem adequate to influence material movements. Besides, if they could, they are themselves the outcome of material activity. If there be prejudice, superstition, and stupidity in the world, matter is to blame for it. It is matter that hath made both us and our opinions, and not we ourselves. If, then, there could be any distinction between reason and unreason in this system, we should be forced to allow that, along with a little right thinking, matter has done a vast deal of wrong thinking. It has an inherent tendency to irrationality and falsehood. It is the sole source of theologies, superstitions, and anthropomorphisms, as well as of the sun-clear truths of advanced science. If we were persons with faculties which could be carelessly used or wilfully misused, these things might be laid to the charge of individual carelessness or stupidity or dishonesty; but as we are not such persons, all these things must be charged to matter itself. This conclusion remains if we call matter the unknowable, the mysterious one, or anything else which may strike our fancy. In every system of necessity we have to posit in being, along with reason, a strong tendency to unreason, which throws discredit on all knowledge. According to the materialist himself, for one sound opinion matter has produced a myriad unsound and grotesque ones. But even yet we have no ground for distinguishing the rational from the irrational. In the old philosophy the distinction between a rational and an irrational belief is, that the former rests on grounds which justify it, while the latter is groundless. But materialism cancels this distinction entirely, and reduces all beliefs to effects in us. It recognizes production only, and allows of no de-

duction. All our beliefs are explained by their causes, and none have any rational advantage over any other. The only distinction is of relative extent; and the only standard possible, unless we yield to pure ipsedixitism, is to take a vote and view rational beliefs as those which are most widespread and enduring. But even this is impossible. In raising the question how to decide between opposing beliefs we have implicitly assumed that reasoning is possible, and that we have power over our beliefs. In discussing the nature of the infinite we pointed out that rationality and the distinction between truth and error are possible only in the fact of freedom. Where there is no freedom, there is no reason. So far from having power over our beliefs, we are our beliefs, and they are determined solely by the nerves. If there were any reason left, the only conclusion it could draw would be that one belief is as good as another as long as it lasts. The actual is all, and any rational distinction between true and false vanishes.

Thus we have traced the materialistic theory of knowledge to its outcome, and the outcome is overwhelming scepticism. The theory can lay no claim to be either scientific or philosophic, because it makes both science and philosophy impossible. Looking at the world with materialistic eyes, we see a necessary kaleidoscopic process. Parts of the process are attended by thoughts, partly true, but mostly false. All of these thoughts which collide with materialism are known to be false, not by reasoning, but by hypothesis. Throughout the world-process there is a strong and almost overwhelming tendency to dream and falsehood; and, but for certain advanced thoughts, error would have reigned supreme. We say advanced thoughts, for, by hypothesis, thinkers do not exist. Looking at human life and action, we see pure automatism. The action of men and women may be attended with thought and feeling; but from the beginning it has taken place without any intervention of thought and feeling; for there is no reason for be-

lieving that any mental state can affect any physical state. Even the materialist's thought and purpose count for nothing in the exposition and publication of his philosophy. By his own theory all that has ever been done in this direction has taken place without any control or guidance of thought—a statement which is the most credible of the materialist's many utterances. Indeed, this statement throws light on many of the homilies from this quarter. It has long been a puzzle to the critical mind how any rational being could produce some things which have appeared from materialistic speculators. But now we see that reason had nothing to do with their production, and the wonder rather becomes that the nerves should do so well.

We have debated the question thus far on the assumed ontological reality of matter, and have reached the following conclusions: Materialism, in all its forms, fails utterly to explain the most prominent facts of the mental life. Consciousness, memory, reasoning, and the unity of the ego are impossible on the theory. The apparent success of materialism in making them the phenomena of an aggregate is due to overlooking the mind for whom the phenomena exist. The theory, then, does not account for the facts.

Again, if we allow the theory and develop its consequences, it results in the destruction of all knowledge and rationality. Our consciousness of power is declared to be a delusion. Our belief that our thoughts and purposes count for something in the course of events is a mistaken fancy. Reason itself is merely the outcome of conflicting nervous excitations. Memory, too, loses all relation to the past, and represents merely what the brain now does, and not what we have experienced. There is no valid standard of distinction between truth and error, and no power to apply it if there were. The theory, then, not only does not account for the facts, but it has suicidal consequences. But the universal test of a theory is that it shall account for the facts

in the simplest and best way, and that the deductions from it shall always harmonize with the facts. Materialism fails in both respects. The spiritual theory, on the other hand, is so simple and so harmonious with the facts that not a few declare it to be a direct utterance of consciousness itself. Reason, therefore, rejects materialism, and leaves it to weakness and volition.

Our own view of the soul and its origin has already been given in various places, but it may be repeated in a brief paragraph. Returning in thought to the ontology, the reader will observe that our ontological convictions are just the opposite of those of the materialist. While he cannot believe in anything but a phenomenal spiritual existence, we cannot believe in anything but a phenomenal material existence. For him spirit is the unsubstantial, for us matter is the unsubstantial. Which member of the antithesis is justified can be decided only by considering the arguments offered. In discussing change, we found that only personality fills out the complete notion of being. In treating of matter and force, we found ourselves compelled to deny true substantiality to the elements, and to reduce them to mere acts of the infinite. Only in the finite spirit can we find any substantial otherness to the infinite. From this standpoint the ontological reality of matter disappears entirely, and with it the materialistic question vanishes. The soul is directly posited by the infinite under those circumstances which he has made the norm of his action. As thus posited, it represents no combination of antecedent factors, but a new beginning in the system. In speaking of life, however, we spoke of a phenomenal materialism; we adopt the same here. The development of the soul proceeds with that of the body, and doubtless in the same way as the materialist supposes. This, of course, does not mean that the soul is ever half-made; this would be absurd. It means that the unfolding of the soul's powers is conditioned by the advance of the organism, and proceeds parallel with it. Our

disagreement with the materialist, therefore, is ontological, and not phenomenal. The phenomena are the same for both; the difference concerns their interpretation. We reject the materialist's ontology as always superficial, and often contradictory; but his facts we accept with all thankfulness. For those, however, who may find our doctrine of the phenomenality of matter rather strong meat, we point out that the truth of spiritualism is in no way dependent upon it. Our entire argument for spiritualism has been conducted on the assumed substantiality of matter.

We cannot be expected to represent to the imagination the immanent acts of the infinite whereby new factors are posited in being. We rather forbid all attempts to do so; for the imagination can only deal with space-forms, and space itself is phenomenal. So far as we may speak in terms of space, we should say, not that God produces souls in an outside region and then puts them in bodies, but that where and when the order of things which he has adopted as the norm of his action calls for it, there and then a soul begins its existence. It is not, however, unrelated to its antecedents, but is in general such as the antecedents call for according to the law of sequence in this realm. Hence the facts of heredity. But heredity is not the only fact of the system. The plan of things may also call for advance; and the infinite may upon occasion break with heredity, and posit souls with higher gifts and powers. But this subject lies beyond human knowledge in the inscrutable counsels of the divine will. But in thinking of the matter we must always avoid the deistic notion of an outside God, and remember that neither body nor soul develops in a region apart from God and by itself, but that God is immanent in both.

We view man as we find him, then, as a double being. His true self is the soul. This, however, is in immediate interaction with the body; and this, in turn, is simply that part of the cosmos with which the soul is in immediate relation; or, rather, it is a connected system of activities on

the part of the infinite, by which the soul is put in connection with the universe and furnished with the conditions of its activity. Of course we do not fancy that this result answers all questions, for it leaves many questions quite untouched. It gives no insight whatever into the specific and detailed forms of the interaction between soul and body, or into the significance of the body for our mental life. These questions must be left to inductive science, and science must be content with describing the interaction without deducing it. But it would be great folly to reject the spiritual conception because it does not answer all questions, especially as every other view leads to hopeless and ghastly nonsense.

CHAPTER II.

THE PROCESS OF KNOWING.

THE aim of this chapter is to expound the process of knowledge, and especially the process of perception. The nature of the product will be considered in the next chapter. As usual, we start from the common-sense realism.

When two persons converse together, no thoughts leave the mind of one and cross into the mind of the other. When we speak of an exchange of thought, even the crudest mind recognizes that this is a mere figure of speech; or, at least, that it is not to be spatially interpreted. How, then, is an exchange of thought possible?

The answer must be, first of all, that it is possible only through the general fact of interaction, and through the existence of a system of signs which shall be understood by both persons. Thought is never perceived in itself, but only through certain natural or conventional signs. As a subjective act it cannot be perceived, except through some objective symbol. But the general fact of interaction and a system of signs are but conditions for the exchange of thought. The actual exchange takes place only through a certain activity on the part of both. One thinks and gives the appropriate objective sign. The other perceives the sign and reads off its meaning. The sign is but the occasion upon which the second mind constructs within itself the thought of the first, and then attributes the thought to the first. To perceive another's thought, we must construct his thought within ourselves; and our perception of others'

thoughts is nothing but such an inner construction, plus an attribution of them to others. The thought is our own, and is strictly original with us. At the same time we owe the thought to the other; and if it had not originated with him it would probably never have originated with us.

But what has the other done? There has been no spatial or ontological contact, and there has been no transmission except in a figurative sense. If we limit the communication to language, we must say that the speaker emits nothing and the hearer receives nothing. What the speaker does is this: By an entirely mysterious world-order the speaker is enabled to produce a series of signs which are totally unlike thought, but which, by virtue of the same mysterious order, act as a series of incitements upon the hearer, so that he constructs in himself the corresponding mental state. The act of the speaker consists in availing himself of the proper incitements. The act of the hearer is immediately only the reaction of the soul against the incitement. The parallelism of the resulting mental state in the hearer with that of the speaker is the sublimest instance of adaptation, or design, of which the known universe affords any example.

All communion between finite minds is of this sort. Instruction and education of every kind consist not in pouring knowledge into the mind, but in directing its activity so that it shall develop knowledge within itself. The wisest teacher can do no more than to avail himself of the system of signs, or incitements, which the world-order provides, and then trust to the student's mind to react against the incitement by growing thought and insight. Education is ever and only a leading forth of the mind's own powers; a putting of it into possession of itself. This fact, however, does not imply that all alike are capable of equal development. What we have said applies only to the general form of the interaction between finite minds, and is entirely compatible with different capacities in those minds. The sys-

tem of signs itself must be learned, and hence the resulting reaction in the learning mind is conditioned both by previous knowledge and by mental facility. Some minds are more ductile and susceptible than others; and, by consequence, they respond with a wealth of mental action to incitements which to others would be no incitements whatever. To a boor, a hacked flint would say nothing, but to an archæologist it might be a volume of ancient history. The same difficulty which leads to a non-understanding of the signs also leads often to a misuse of the signs, so that they have no definite meaning. In that case we cannot construct the thought from the sign, either because it indicates none, or because it admits of various significations. It is, indeed, quite conceivable that the relation between the incitement and the reaction of thought and feeling should be fixed and universal. If such were the case, there would be no misunderstanding, and no difference of capacity for receiving instruction. There might still be differences in our power to use and retain knowledge, but there would be none in our power to receive and comprehend it. But none of these considerations affect our conclusion that to perceive another's thought we must construct it in ourselves, and that to inform another of our thought is simply to incite him to a form of mental action like our own.

Probably no reflecting person would deny this conclusion; but when we say that what is thus true of perception of another's thought is equally true of the perception of the outer world in general, many minds will be disposed to question, and not a few will deny it outright. Yet there is no alternative but to affirm that to perceive the universe we must construct it in thought, and that our knowledge of the universe is but the unfolding of the mind's inner nature, the reaction of the mind against incitement, an inner interpretation of signs which are as unlike the things perceived as the alphabet is unlike the thoughts expressed by it. The justification of this view is found in the nature of interaction it-

self. We are beyond the point where it is necessary to show that when one thing acts upon another it contributes nothing to it, but only furnishes the conditions of the thing's reaction. Which of many possible reactions shall be realized depends on the circumstances, or on the other agents acting; but the reaction, when it does take place, is always an expression of the nature of the reacting thing. We have formulated the fact of interaction as follows: When A changes, B, C, D, etc., all change in definite order and degree; and we explain this by saying that A acts on B, C, etc. If A becomes A_1, B becomes B_1, and C becomes C_1. If A becomes A_n, B becomes B_n, etc. But B_n is always and only the expression of what B is under the condition A_n. A decides, therefore, which of several possible forms B shall assume; but whatever the form of B, it is always an expression of B's own nature. Thus in the atomic theory, we must always say that the various reactions of any class of elements are but expressions of their inner nature. Whether oxygen and hydrogen shall unite to form water depends on various conditions; but when they unite, the union is the result of what the elements themselves are. What we must say of all interaction we must say of the interaction between the soul and the not-soul. The reaction of the soul in such cases is an expression of what the soul is; and represents nothing poured into the soul from without, but simply the action of the soul under the peculiar circumstances. Now all external perception rests on some external action upon the soul. The mere existence of a thing is never, even on the most realistic theory, a sufficient ground of its perception. If it were, there would be no reason why we should not be perceptive of all existence, at least so far as our finite power of attention and comprehension goes. The far and the near would be alike perceptible. But there is no need to insist upon this point, as all the facts of perception imply it, and, besides, no one denies it. We have only to call attention to its implications. This external action, like all

action, furnishes only the incitement which leads to a peculiar reaction on the part of the soul. Perception is the product of such reaction. Knowledge is not passively imported into the soul, but is developed by the soul within itself. Just as we perceive another's thought by constructing it in our own minds, so we perceive the universe by a similar act of construction. The process is active, and not passive. It is constructive rather than receptive; or rather it is reception only through construction. Only in this way can knowledge enter the mind. Only by building the universe in thought can we perceive it. To the question, How is perception possible? we answer, Perception is possible only as the mind constructs its objects within itself.

The ancients, and especially the scholastics, gave a different answer. They fancied that things are perpetually throwing off images, or forms, or species, or appearances which drift across the intervening space, and finally enter the mind, where they mediate a knowledge of the things from which they came. It is not necessary to criticise this view, as it has long been abandoned. In fact, the theory was about the best possible until the advent of modern physics. The absolute necessity that the mind be acted upon in order to perception, made it equally necessary that some medium be found between the distant object and the perceiving mind. Acoustics and optics have filled up this gap by vibrating media, and have thus finally dispensed with species, etc. The sensationalist doctrine of impressions as explaining perception is not a theory at all. It is merely a figure of speech which distorts rather than describes the fact. The Lockian metaphor of a *tabula rasa* has played the same misleading part, and has led many to fancy the process explained. By describing the mind as a waxen tablet, and things as impressing themselves upon it, we seem to get great insight until we think to ask where this extended tablet is, and how things stamp themselves on it, and how the perceptive act would be explained even if they did.

When these questions are raised and pursued, it becomes clear that we are dealing only with a misleading figure of speech. Impressions, photographs, etc., are at best only descriptions of the fact, and are quite empty as explanations of it. Even if we should make the grotesque supposition that things really stamp or photograph themselves on the mind as an extended substance, the perceptive act is as far from being explained as ever. All that we should have would be an outline on the mind, and not a thought in the mind. Not a step would be taken towards subjectivity. This could be reached only as the mind, by an inner act, changed the stamp or image into a conception; that is, the mind would still have to react against the objective impression, by producing a subjective perception. Until this is done, the impression would be as external and as dead when made on the mind as when made on the cake of wax. The strength of such figures of speech lies in the fact that we regard the knowing mind as something objective to ourselves. Accordingly, when we figure the mind as a tablet with pictures on it, we also conceive of ourselves as looking at the picture, and then we mistake our imagined perception of the picture for its perception by the impressed mind. The investigator confounds himself with the person investigated; and since the former is conscious of his own fancies about the latter, he thinks the problem solved. We return, then, to our previous view. Perception is not possible as a passive importation of ready-made knowledge into the mind, or by any pictures or impressions on the mind, but only by an immanent activity in the mind, whereby the mind, upon occasion of certain excitations, constructs within itself the conception of an object, and objectifies it under the form of externality.

The conclusion which we thus reach from the nature of interaction appears with equal necessity when we regard the physiological facts concerning the conditions of perception. The idealist might be inclined to reckon these facts them-

selves as phenomena, but the realist must allow their full force. Realism can never complain if its own facts remove the mind to a great distance from the object, and restrict the knowing process to an interpretation of signs which are totally unlike the object. On the realistic theory of common-sense, such is the case. The immediate antecedents of sensation and perception are a series of nervous changes in the brain. Whatever we know of the outer world is revealed only in and through these nervous changes. But these are totally unlike the objects assumed to exist as their causes. If we might conceive the mind as in the light, and in direct contact with its objects, the imagination at least would be comforted; but when we conceive the mind as coming in contact with the outer world only in the dark chamber of the skull, and then not in contact with the objects perceived, but only with a series of nerve changes of which, moreover, it knows nothing, it is plain that the object is a long way off. All talk of pictures, impressions, etc., ceases because of the lack of all the conditions to give such figures any meaning. It is not even clear that we shall ever find our way out of the darkness into the world of light and reality again. We begin with complete trust in physics and the senses, and are forthwith led away from the object into a nervous labyrinth, where the object is entirely displaced by a set of nervous changes which are totally unlike anything but themselves. Finally, we land in the dark chamber of the skull. The object has gone completely, and knowledge has not yet appeared. Nervous signs are the raw material of all knowledge of the outer world according to the most decided realism. But in order to pass beyond these signs into a knowledge of the outer world, we must posit an interpreter who shall read back these signs into their objective meaning. But that interpreter, again, must implicitly contain the meaning of the universe within itself; and these signs are really but excitations which cause the soul to unfold what is within itself. Inasmuch as by common consent

the soul communicates with the outer world only through these signs, and never comes nearer to the object than such signs can bring it, it follows that the principles of interpretation must be in the mind itself, and that the resulting construction is primarily only an expression of the mind's own nature. All reaction is of this sort; it expresses the nature of the reacting agent, and knowledge comes under the same head. This fact makes it necessary for us either to admit a pre-established harmony between the laws and nature of thought and the laws and nature of things, or else to allow that the objects of perception, the universe as it appears, are purely phenomenal, being but the way in which the mind reacts against the ground of its sensations. We shall return to this point in a later chapter; for the present we content ourselves with reaffirming the constructive action of the mind as an absolute condition of external perception.

Psychologists of the Scotch school have often sought to evade this conclusion by speaking of an immediate knowledge or a direct gaze on reality, etc. These expressions are well calculated to seem conclusive. The notion of immediate knowledge appears to forbid any mediation, and all idealistic inferences are excluded. There is nothing to do but to admit the facts thus immediately known. The direct gaze on reality has the same implication. We open our eyes, and the world lies before us. It is immediate vision. That which makes this notion so very clear is the misleading influence of our visual experience. We mistake the body for ourselves; and as we see our hand in contact with the object, we are sure that we have immediate contact with being. But in fact the question still remains, How is this direct gaze of the mind on reality possible? And this we must answer as we have already done. Things neither photograph nor stamp themselves upon the mind; these expressions are seen to be misleading figures of speech. Things act upon the mind, and the mind reacts by constructing in itself the thought of an object, and this constitutes our

knowledge of the thing. Even with the notion of immediate knowledge we cannot dispense with the fact and implications of interaction. Mediate knowledge in sense-perception is that gained by inference, as in the acquired perceptions; and immediate knowledge can only mean such knowledge as results from a direct interaction between the self and the not-self. Such knowledge is not an inference. There are no intermediate mental steps; and the resulting mental act or state is that which directly follows from the external activity according to the law which governs the interaction. But immediate knowledge implies no passive reception of ready-made knowledge. It comes under the general law of interaction, and can only be viewed as the result of a mental construction. We return, then, to our affirmation that perception is possible only through a constructive activity on the part of the mind, and that this activity is aroused not by any contact with the objects perceived, but only by certain excitations which are totally unlike the object.

It may possibly occur to the disciple of the Scotch school to say that we are confounding the conditions of perception with perception itself. When the conditions are fulfilled, the mind gazes directly on reality. But no relief can be found in this direction. These conditions really condition; so much so that there can be no doubt that if the present order of sensations were maintained in us, no matter how, the assumed real world might fall away without our missing it. As a matter of fact, the so-called sense-illusions arise in this way. The signs are mimicked, and we see something where there is nothing to see. That we are mistaken in such a case is known only by the disagreement of one sense with another, or by the non-existence of the object for other persons. Even Reid, who would hear nothing of representation, and who insisted upon an immediate knowledge of reality, could find no way of connecting the sensation with an object except by positing an instinct or original principle

of our constitution, whereby, upon occasion of sensation, we are led to affirm a thing. Hence, in spite of the immediateness of perception, trust in knowledge is made to rest upon the veracity of God, which, it is assumed, would be impugned if the things were not really there. On this theory, then, knowledge does not depend on the presence of the thing, but on the sensation, plus the instinct, or original principle; and the sensation is constantly asserted to be totally unlike the thing. Hence, the vision of the world, even on Reid's theory, is not something which passes into the mind, but something which unfolds in the mind under certain excitations. Here, too, in order to know the universe without, it must also be within. It must be given in plan and principle in the knowing mind. If we might personify the universe, and attribute to it a desire to pass into human knowledge, or to appear in the human mind, we should say that it must proceed just as a human teacher does. The latter avails himself of a system of excitations whereby he incites the mind of the student to unfold itself and to develop knowledge within itself. All the while he is putting nothing in, but is leading the mind out into the possession of itself. In the same way must the universe proceed. It can put nothing into the mind, but must seek to bring out of the mind the treasures hidden there. It can, then, only avail itself of a certain system of excitations which shall lead the mind to unfold. The objective macrocosm can pass into knowledge only through the subjective microcosm. However realistic our views may be, we cannot escape this conclusion.

Our view of perception as involving an excitation of the soul by something not itself, and a corresponding reaction by the soul, demands a consideration (1) of the excitation, and (2) of the reaction.

The first point we leave to physiological psychology. Physiology finds the ground of our sensations in certain

movements in the brain; the idealist finds it in a direct action of the infinite upon the soul. Allowing the claim of the physiologists, it must still be allowed that the nature and form of these brain-movements are in the highest degree obscure. Prophecy has not been wanting, but there has been less of fulfilment. However, there is nothing so potent in the solution of problems as the mysterious. Hence, the obscurity and mystery of brain-physiology in relation to mind have not failed to produce a large and growing brain-mythology. We pass to the reaction.

The mental reaction is double, involving both sensation and thought-activity. There is no apriori reason for this order. That the soul must be affected by the not-soul, in order to react with knowledge, is a demand of causation, but it is entirely conceivable that this affection should manifest itself only in the resulting perception, and never as a distinct element of consciousness. If this were the case, there would be no sensation, and the mental state would be exhausted in the perception of the object. The so-called acquired perceptions, also, would not exist, but perception would be immediate, and without a process. The mind would pass at once into the mental state corresponding to the object, just as a mirror immediately reflects the objects presented to it. But this is not the case. The first effect of external action is to produce sensitive states in the soul, and perception arises only through combining and reacting upon these states. The process is a temporal one, and perception proper arises gradually. Thus it becomes possible to distinguish the doctrine of sensation from that of perception. The sensation is the primal and basal reaction of the soul against external action; and sensations, rather than nerve-changes, constitute the true raw material of knowledge. From the idealist's standpoint, the body is only a phenomenon, and hence cannot be the cause of our sensations; but, for psychologists of every school, sensations exist as raw material. They constitute, also, the excitations

which arouse the soul to a higher thought-activity and thought-construction.

We are beyond the need of showing that sensations are not imported ready-made into the mind. As long as we remain in the physical realm, we have matter in motion, not sensation. We are, also, beyond the fancy that sensation can ever be interpreted in terms of matter. There must come a moment of direct interaction between mind and body, one member of which will be a physical change in the brain, and the other member of which will be a sensation in the mind. The attempt to find some go-between, which shall be neither physical change nor sensation, rests upon a confused imagination, and only increases our difficulties. We are led to this attempt by the desire for explanation. Immediate interaction is always a fact to be recognized, not understood. Hence we seek to interpolate members in order to give the explaining and deducing tendency some satisfaction. But explanation cannot go on forever. The interpolated members must themselves be in interaction with those between which they are located, and thus the number of direct interactions is increased rather than diminished. Another source of the desire to interpolate members is the fancy that, by a series of intermediates, the gulf between the physical and the mental can be filled up; and this fancy, again, rests upon the further fancy that interaction between things of the same kind is more intelligible than that between unlike things. We have already seen the baselessness of this notion. The direct action between body and soul is in no way more incomprehensible than that between two physical elements. All that physiological psychology can profitably do in this matter is to study the conditions of sensation and the relations between the physical and the mental series. Such knowledge is attainable and valuable, but the attempt to comprehend how a physical movement can cause a sensation implies a state of mind from which nothing valuable is likely to result.

Of the physical conditions of sensation nothing can be said apriori. All interaction expresses a community of the interacting things. The physical elements are conceived as sensitive to all the changes in one another. The conditions of inner change are found throughout the entire system. If, now, we should endow them with consciousness of these inner changes, the conditions of that consciousness would not be contained in the action of the neighboring atoms only, but in that of every atom in the system. It is equally possible, as a conception, that the soul should be directly cognizant of the changes in the outer world, so that all physical movements should be followed by sensation and perception. The doctrine of the clairvoyants, who claim to see things by some direct gaze of the soul, and without any help of the senses, is, in itself, not one whit more mysterious than the ordinary mode of perception. The claim, sometimes made, of an ability to see through the skin or the back of the head, etc., involves, in itself, nothing stranger than the common facts of perception; while, for personal communion, the notion of a direct sympathy of mind with mind is, apriori, at least as possible as any other. That a movement out of the brain should be attended by thought and feeling would be no more wonderful than that a movement in the brain is thus attended. The only reason for the difference is, that the brain is in interaction with the mind, while the outer world is not. But there is no assignable reason why this interaction should not extend beyond the organism. But what is thus possible in conception is far enough from being the fact. A very small part of the system is organic to the soul; and even organic changes produce no known effect in the soul, except as they are propagated to a central organ by means of nervous connection. Adopting the realistic theory, we say that the interaction between soul and body takes place in the brain. When there are certain forms of brain-action, certain sensations result in the soul. This order, however, is no apriori neces-

sity. Why there should be a body, and why it should be such as it is, are questions to which there is no sufficient answer in human knowledge. The body is, for the spiritualist, only a contrivance for eliciting and guiding the mental life; but why it should be as it is, and why the result is not reached in a more direct way, are questions whose answers lie beyond the human horizon. Indeed, there is a certain grotesqueness in most of the duties of the present life. That a soul should have to watch over a body, and feed and shelter it for a lifetime, seems quite absurd. How much better it would be if we could devote ourselves to pure thought or to æsthetic considerations, instead of spending by far the larger part of our strength in purely material effort for material interests. These considerations have so impressed some persons as to lead to a distribution of labor, according to which the lower interests are turned over to the soul, while the higher fall to the lot of the spirit. Unfortunately, this division of labor is imaginary. The spirit has as much trouble on this view as on any other. But why should a spirit be tied to food and clothes and sleep, and be compelled to busy itself so largely with physical interests? No answer can be given. We are in a body, and our mental and spiritual well-being is firmly bound up with it. To discover the forms and laws of the interaction between soul and body, and also the detailed significance of the body for the mental life, is the province of physiological psychology. Our aim is, simply, to determine some principles which must rule such investigations. Before beginning discovery, it is sometimes important to know what may be discovered. Otherwise, strength may be wasted in forming hypotheses which are inconsistent with reason itself.

The law of the conservation of energy holds in the physical world, and it is a matter of interest to know how the soul is related to this law in its interaction with the physical world. We have discussed this doctrine in the chapter

on matter and force, and need not recall the limitations mentioned there. With regard to the relations of the soul to the energy of the physical system but two views are possible, which we can best get before us in the following way: If we should trace an in-going nerve-current, which is to be attended with sensation, should we find, at any point of the series, a loss of physical energy which had been expended in causing the mind to react? or should we find the energy of every physical antecedent completely reproduced in the physical consequent? Conversely, if, starting from the mental side, we could measure the energy of the nervous state just before volition, should we find an influx of energy which could not be accounted for by the previous nervous state? These questions contain the problem. Our answer, either way, can only express an opinion, as knowledge is impossible. The first view is, essentially, that of the pre-established harmony. In that case, the physical series would have no connection with the mental series; and the cause of sensation must be found, not in the physical world, but in the direct action of the infinite, who would himself thereby become the source of all excitation, and hence of our world-vision. In that case, the physical series would become a pure phenomenon. We posit that series only as the objective ground of our sensations, and when, by hypothesis, it no longer serves as such ground, then its reason of existence ceases, and we could know of its existence only by a special revelation. Our vision of the world is purely a product of the mind in reaction against the ground of its sensations, and if this ground be the infinite itself, we are led directly to Berkeleianism. Certainly the average American realist would be rather averse to this position, and, for him, there is nothing to do but to take the other, according to which the interaction of soul and body is attended by a mutual expenditure of energy. Physical energy does not become mental energy, and, conversely, mental energy does not become physical energy, but each may be expended in

furnishing the conditions of the other. From the standpoint of the phenomenal reality and the transcendental ideality of the physical system, this conclusion is phenomenally correct and transcendentally doubtful. But this result, however true, holds only for that direct interaction of soul and body where each excites the other to activity, as in sensation and volition. For that great part of our mental life which is subjective in its origin, as reasoning, reflection, and emotion, the law can have no significance, until it is shown that every act of thought, reflection, etc., has a direct external excitation. Even in the physical realm the law holds only for those energies which result in motion. If the elements could maintain an inner series of thoughts within themselves, that series would lie outside of the law of conservation. In the same way, if the mind, though aroused by the outer world, be capable of continuing a mental series within itself, without further excitation from without, that series, also, lies beyond the law of conservation.

This leads to another question. The physical series is totally unlike the series of sensations which accompany it. Still there must be some fixed relation between the two, or sensation would be lawless. The nervous series in vision cannot be the same as that in hearing; otherwise there would be no reason why the result should be one rather than the other. Again, an increased intensity of nervous action ought to be followed by greater intensity of sensation. The question divides in two: (1) What is the relation between the intensity of nervous action and that of the resulting sensation? (2) Has every mental state a specific and peculiar nervous sign, so that from the sign we could infer the corresponding state? The first question is one of experiment; the second is one of opinion only. The materialist insists, of course, that every conscious state has a molecular attendant and a molecular equivalent.

To the first question experiment has as yet returned no sufficient answer. It may be viewed as settled that the in-

tensity of excitation and that of sensation are not in direct ratio. Fechner, building upon Weber's experiments, has announced the law to be, that the intensity of the sensation varies as the logarithm of the intensity of the excitation. The difficulties in the way of experiment, however, are so great that no faith can be placed in the results. To begin with, there is no fixed standard of the intensity of sensation. It is easy to know by the themometer when water is twice as hot, but it would be hard, indeed, to tell when it feels twice as hot; and yet without this inner standard there are no data for comparison. Again, the intensity of sensation does not depend solely on the amount of nervous action, but on the amount of difference between the two excitations. Thus water may be very hot to one hand which has been holding a piece of ice, while it may be quite cool to the other hand which has been heated at the fire. Further, the intensity of sensation varies with the attention of the mind. Attention can intensify sensation, and inattention can reduce it to a vanishing quantity. The most of the sights and sounds which fall upon our organs pass unnoticed, and thus never enter into distinct consciousness at all. Even the soldier may receive a terrible wound in the excitement of battle, and not feel it at the time. Upon the possibility of abstracting our attention from what would become sensation, if we attended to it, depends the development of our higher rational life. Here we have the first act of that freedom without which reason itself would be impossible. On the other hand, expectation and belief are capable of intensifying and even of producing sensation. The belief that one is hurt has often produced the appropriate pains; while the simple expectation of being tickled is enough to fill many with excessive uneasiness. The further fact is to be noticed that an increased intensity of excitation often results in a change of kind in the sensation rather than in an increased intensity. A mild warmth is pleasing; but a high heat is painful. To call the pain of a burn an intense

form of pleasure is hardly in accordance with good sense. Of course, the absolute intensity of sensation is purely individual. The same physical cause will have very different sensitive effects in different persons. Nor are these all the difficulties by any means in the way of experiment in this subject; but these are enough to throw doubt upon any fixed law as to the relation between the intensity of the physical action and that of the sensational effect. It may be that Fechner's law expresses the relation in the ideal case, just as the simple formula for the pulley expresses the law of the ideal pulley's action, but which, owing to friction and the stiffness of cordage, is never actually true. Perhaps, then, if a constant amount of attention and expectation could be maintained in some one who could also exactly measure the numerical intensity of his sensations the law might be found to hold. Bearing in mind what we have said concerning the mechanical theory, it is clear that the actual outcome, in any case, must be determined by some general law; but the factors which are to be united are not merely the invariable ones of physics, but some of them are dependent on volition. Given all the factors—the attention, the expectation, and the previous state of the soul, as well as the nervous factor—no doubt the sensational outcome is a fixed and necessary one.

The answer to the second question is excessively easy to the materialist. He has no doubt that every mental state is attended by a specific and peculiar nervous state, and has a fixed molecular equivalent. He claims that, if brain physiology were thoroughly understood in its relation to the mind, then, if we could look into a brain so as to perceive all its circumstances, we could read off all the thoughts and feelings which are passing in the mind. Each nervous state would have its appropriate mental state. Unfortunately the materialist is more given to drawing his facts from his theory than he is to drawing his theory from the facts. But materialism is for us "an overcome standpoint," and we

need not consider its objections. The view which we are considering, however, may also be held by the spiritualist. Admitting an interaction between soul and body, it is also possible to hold that all thought and feeling result from this interaction, and, hence, that the physical and mental series correspond throughout their entire length. If we should allow this to be so, the next question would be as to which is first, the physical or the mental series. To make them mutually independent would be to fall back into the pre-established harmony, and ultimately into idealism; for as soon as the mental series is allowed to be independent, the physical series becomes a pure phenomenon. But we cannot make the mental series entirely dependent on the physical series, and deny the mind any self-control; for, in that case, we should fall back into the sceptical difficulties which we mentioned in the previous chapter, when considering the materialistic doctrine of the relation between the physical and the mental series. Consciousness would be utterly delusive, and reason would lose all authority. The ground and bond of all our mental movements would be no inner order and life of reason, but solely certain physical changes. But no theory can be allowed which breaks down all theories, itself among the rest. Suicide is never an interesting process, even in speculation. We must, then, allow the mind the power of continuing and controlling the mental series beyond the limits of sensation according to its own laws and without any compulsion from the physical world. Nor is this necessity of theory opposed to knowledge. On the contrary, all the facts of consciousness support it. In the previous paragraph we have seen that, even in sensation, the mind's power of self-determination appears as modifying even the sensational outcome of nervous excitation; while no known facts whatever point to any physical antecedents which necessarily lead to reasoning and reflection.

Allowing this, however, our question remains unanswered. Suppose the mind can initiate a mental series, is such a se-

ries in the mind attended by a specific and peculiar series in the brain which would be impossible with any other train of thought? The materialists are compelled to answer in the affirmative; for if thoughts are physical products, identical physical states could not produce unlike thoughts. Accordingly many of them have feigned that for every idea there is a corresponding nerve-vesicle, while many others prefer to teach that for each idea and feeling there is a corresponding nervous vibration. But these fancies are only deductions from their theory, and are in no sense indications of facts. The materialist knows that it is so, because it must be so. As thus deduced, the conclusion will have no weight with those who reject the theory. For all but materialists, the doctrine in question must be highly improbable. When we remember the multiplicity of our thoughts and feelings, and the boundless variety of shading in both, it becomes highly incredible that there is a specific and peculiar nervous state for each. To this we must add that the theory must affirm a specific state for all possible thoughts and feelings, as well. The materialist is led to overlook this complexity by the fancy that thought and feeling in general are all that needs explanation; whereas thought and feeling are nothing but general terms, of which the reality is always a specific thought about some specific thing, or a specific feeling in specific relations. When this is remembered, we can hardly help agreeing with those who declare that matter in the brain does not admit of so many combinations. Prof. Newcomb, for example, insists that the complexity of the problem is such as to be insoluble by material combination. However this may be, we have to admit that the mind can carry on a series in itself without being determined from without; and hence it is quite gratuitous to feign that that inner series which is undetermined by the physical world must still have an exact representation and equivalent in the physical world. The fancy is born of materialism, and its reason ceases when materialism is abandoned.

But it may be urged that mental action, even in its highest and most abstract forms, is attended with nervous action. Even the mathematician and the philosopher cannot think hard and long without finding that the brain takes part even in their abstruse and immaterial reflections. Even in prayer and devotion the brain has its part to play. In these cases we may allow that the mind begins the series, but that series is certainly represented on the physical side. How, then, can it seem absurd to say that for every thought and feeling there is a definite physical state, either as cause or as effect? To this the answer is, that there is a great difference between saying that nervous action in general is necessary to mental activity in general, and saying that each specific mental act is attended by a peculiar form of nervous action. The same physical energy may be expended in a multitude of ways, according to the will of the engineer. It is equally possible to regard nervous action as merely furnishing the general conditions of mental activity, while the specific forms of the activity depend on the mind itself. This view is all-sufficient to cover the facts, and escapes the gratuitous difficulties of the other. Only materialism and fatalism can find it inadequate; and as they both result in the destruction of all theory, we cannot allow their scruples any weight. We conclude, then, that in sensation there is a corresponding physical state for the mental state, and that from either member of the interaction the other member can be affirmed under normal conditions. But when we pass beyond sensation this correspondence ceases. Then the mental series is a product of the mind itself, and is determined only from within. The physical fact in this case is only that nervous action in general which is the physical condition of mental activity in general. If, however, any one thinks it possible and desirable to find in a few cubic inches of brain-matter a specific physical state for every shade and object of thought and feeling, real and possible, there is no law against it. A faith so serene cannot fail to be a law unto itself.

For the production of sensations, external action is necessary; but when they are produced, they come under mental laws which find no proper analogy in the physical world. In particular, they admit of reproduction and of combination among themselves. When a sensation has been experienced, it can be brought back without the presence of the object which first caused it. Again, when a group of sensations, *abc*, has been present in consciousness, the presence of any member of that group at a later period will tend to reproduce the others. Thus the odor of an orange will cause the mind to reproduce the color, form, flavor, etc. The qualities of visible things are learned through various senses; and yet so fixed is this association of the several qualities, that any one sense often seems to reveal the entire thing; whereas, in fact, it can never do more than reveal the quality appropriate to itself. This vicarious action of the senses, which is of the greatest practical significance, is due to association and suggestion.

Now this general power of reproducing the past is essential to any rational life. Without it, we could learn nothing from experience, and consciousness would perish as fast as born. Great efforts have been made to explain this power, but without success. Some have made the brain the register of the past, and the sole cause of reproduction. So far as this view is materialistically held, and the brain is made the only source and ground of mental movement, we have rejected it along with materialism itself. But the spiritualist also may hold that every experience leaves a trace in the brain, and that thus the brain becomes a record of the past. But, to maintain this view, we must assume that every mental state has a corresponding physical state which is relatively permanent in the brain. This assumption we have seen to be in the highest degree incredible. Moreover, the suggestion of the past is by no means the outcome of physical experience only. If it were, it might be claimed that the excited nerve in such cases diffuses its disturbance through

the brain, exciting other related nerve-groups, and thus reproduces the past. To be sure, the entire process lies below the microscopic limit, and is known only by hypothesis. Nor is it known very clearly even by hypothesis. How these clusters exist in the brain; how they are related; how they are formed; how an orderly mental life could exist on the theory—these are questions largely unconsidered, and to which only imaginative answers are given. Figures of speech are mistaken for facts, and the implications of a trope pass for science. These difficulties would exist even if all suggestion were due to present physical experience. But the most of suggestion arises in the movement of thought itself; and here there can be no reference to an excited nerve, for there is no particular nerve excited. The movement and the association are in the mind, and have no assignable equivalent in the brain. Finally, this cerebral view fails to notice the most characteristic feature of representative knowledge, recognition. If we suppose a brain-molecule representing a certain idea to be thrown into vibration, the utmost that could result would be the reappearance of the idea. Memory and recognition would be totally lacking. This the mind must do for itself. By its own activity the mind must locate the experience in the past; and until this is done, reproduction is not complete. Hence the cerebral theory is helpless until we posit an order of association and a power of memory in the mind itself; and when this is done the cerebral theory becomes superfluous.

What makes this theory so amazingly clear is the influence of the metaphor employed. When the brain is called a register of the past, it is inevitable that we think either of writing or of pictures on the brain. Under the influence of this imagination we forthwith fancy ourselves reading off the writing or looking at the pictures, and all is plain. The only direct function of the brain in memory is to be found in the recall of physical states. We have already said that sensations can be reproduced, but it is plain that

the reproduced sensations are very different from the original ones. We can recall a pain, but there is the remarkable difference that the remembered pain does not ache. Remembered sensations, in general, are unattended by feeling. As such they are so thin and bloodless that it is hard to put any content into them, or to distinguish them from mere words, whose significance we understand, but cannot truly represent to ourselves. In the reproduction of such states the body may take a part, not in the way of directly recalling them, but as a kind of sounding-board, which gives a volume to the recollections which otherwise they would not have. Since the interaction of body and soul must be mutual, we may suppose that the reproduction of a sensation by the mind would tend to reproduce the corresponding nervous state in the brain, and in that case the nervous state would react upon the sensation, and give it greater body than it would have of itself. Indeed, there is no other way of explaining the so-called subjective sensations. Intense belief or expectation throws the nervous system into the corresponding state, and the result is a sensation of a high degree of intensity. In general, however, the result is not so marked. In attempting to reproduce sensations we notice a nascent, but very slight, affection of the organism. But the function of the brain in this case is not to reproduce the sensation, but to give it a body when reproduced. When we come to the higher activities of the mind, we find the body taking no direct part in reproduction beyond that general significance which the physical condition has at all times for mental action. We also find reproduction of thoughts far more perfect than that of sensations, owing to the fact that the thought is purely a mental act, while the sensation needs the co-operation of the body for its proper existence.

A physical explanation of reproduction cannot be found; a mental explanation is equally impossible. Here, too, metaphors have committed great ravages. Experience is spoken

of as leaving traces or residua in the soul, whereby it may be recovered. A multitude of latent mental modifications are also assumed, each of which represents some experience. These are further supposed to interact, and by opposing or re-enforcing one another to exclude one another from consciousness, or to reproduce the past in consciousness. These modifications are next pictured, and the process is understood. Hamilton even went so far as to invent a conservative faculty for the preservation of our knowledge when out of consciousness. This knowledge is supposed to exist in a latent state, and hence to need a guardian to look after it. These views are mainly products of the imagination, and derive their clearness from the metaphors employed. When, however, we see that the soul and its states are forever unpicturable, it is hard to attach any meaning to the terms used. The fact is this: The soul, in distinction from what we commonly assume to be true of the physical elements, is not indifferent to its past. We assume that the history of an atom has left no trace in the atom itself, but that the same element, under the same circumstances, will be and do the same. This is not the case with the soul. Its past experience has so modified it that the effect of any new excitation will depend very largely upon what the soul has been. This fact we are tempted to represent by traces left in the substance of the soul, or by modifications of the substance. Both expressions are allied to the imagination, and rarely fail to mislead. For us the soul has no substance, but is an agent; and a modification of the substance means only a modification of this activity. The soul is perpetually becoming something else; and, conceived as substance, it changes through and through. But, as it thus moves on, it carries its past with it; not, however, in the form of latent modifications, but solely in the power of reproducing that past in consciousness. Our possession of a knowledge of which we are not conscious means only that we can reproduce that knowledge upon occasion. In no other sense is

past experience latent within us. This power of reproduction is the deepest fact, and admits of no deduction.

But the power of reproduction, in general, does not account for the particular order of reproduction, or the peculiar order in which a present experience suggests a special past experience. This order also admits of no deduction, but only of description. No one can find any reason in the nature of the ideas themselves why they must suggest and recall one another as they do. An elaborate mathematical treatment of this subject has been attempted by Herbart, in which, for the most part, he falls a prey to his own terms. Having decided that a mental affection must have a certain intensity in order to rise into consciousness, and having further decided to call this intensity the threshold of consciousness, and having endowed the mental states with mutual attractions and repulsions, he had all the conditions for an elaborate psychological mythology. This doctrine could not but be imposing when expressed in mathematical series, and especially when illustrated by woodcuts of rising and falling and intersecting curves. But the mythical character of the performance is now pretty generally recognized. In particular, the dynamic opposition between ideas upon which the theory rests is seen to be a pure fiction. The persistence of an idea in consciousness, or its return to consciousness, is in no sense due to any extraordinary force in that idea, but solely to the superior interest or value which it happens to have for us. All other attempts to deduce the order of association are equally unsuccessful. All that can be done is to describe the process of reproduction. The laws reached will be only descriptions of the process; in no case will they give any insight into its inner nature. That even this work has not yet been done appears from the fact that the laws of association are variously given as from one to seven, according to the taste of the speculator. Indeed, it is an abuse of language to call such indefinite rules laws, for the term law implies universality, and often some ra-

tional ground of connection, which is not the case with the laws of association. But this work we leave to descriptive psychology. It was necessary for us to refer to the fact of reproduction and its general significance, but we have no interest at present in the details of the process. Our conclusion is that neither memory nor association admits of any deduction, and still less of any materialistic construction.

Thus far we have dealt only with sensations and their grouping and reproduction, we pass now to the constructive action of the mind. Just as the nervous motions are the incitements which cause the mind to react with sensation, so sensations are the incitements which cause the mind to unfold a higher constructive activity. This is the thought-activity, and means the entire process by which the mind works over the data of sensation, and gives them meaning and rational system. The investigation of the laws and principles of this activity belongs to logic. We consider them here only in a general way, and without pretending to an exhaustive discussion. We aim only to make out that there is such a thought-activity, distinct from simple sensibility, and that its laws are contained within itself. If this be proved, the results for perception are important.

The sensationalists in general are unwilling to admit that there is any specific thought-activity, and claim to deduce all that is found in the mind from simple sensation and association. Volition they largely view as a form of reflex action. So far as this view is materialistic, and regards the mind as merely the sum of its sensations, we have rejected it in advance. We have been forced to view the mind as a true subject, with a proper nature of its own, and hence the only sensationalism which has any claim to be considered is that which views the mental nature as exhausted in the possibility and the laws of sensation. The mind receives sensations from the outer world, and these associate according to certain laws of contiguity, likeness, etc. In this way our mental life is

explained, without assuming any power in the mind beyond a susceptibility to sensation. This theory has always seemed plausible to the uncritical mind, owing to the apparent immediateness of knowledge. In sensation, the mind comes in direct contact with things, and sees them as they are. Its sensations, further, seem to be distinct copies of things, and to give the true properties of things. The notions of thing, property, and extension, are given directly in sensation, and hence we need not posit anything beyond sensation. But, in this uncritical fancy, sensation is confounded with perception, and the possibility of perception is left unexplained. Accordingly, the products of sense-perception, which are reached only through the application of the categories to sensation, are mistaken for the basal fact, and then the deduction of the categories from things into which they have before been put is mistaken for a deduction of the categories from experience. But this fancy perishes when we recognize the complete unlikeness to the alleged object both of the nervous sign and of the sensation. This makes it absolutely necessary that there shall be some subject which shall read back these signs into their meaning. The form of the resulting knowledge can be nothing but an expression of the nature of the knowing mind. On the idealistic theory, which makes the world-vision in general as subjective as light and sound, this necessity is palpable. On that theory, the world-vision is the product of the mind, and resembles nothing which can exist apart from mind. But, on the realistic theory, the same necessity is equally apparent to the reflecting mind. The object is not in contact with the mind, nor is anything like the object in contact with the mind. The vibration of the optic nerve has nothing in it resembling the thought of the sun millions of miles away. Nor has the simple sensation of light anything resembling such a thought. To turn them into such a perception, the mind must apply to the sensation its categories of substance and attribute and of space and distance.

Through their application the sensation becomes the signal of a thing regarded as external, and as the cause of the sensation. The thing is, further, located at a distance and in space. This work of interpretation and location is, and must be, the work of the mind, and without it we cannot advance one step beyond sensation, and hence can never reach an objective world of any sort.

A general difficulty with the sensationalist's theory of perception is, that he seldom attains to a clear consciousness of his own aim. It rarely occurs to him to decide whether he is trying to explain a valid knowledge of a real world, or only the dream of a world which has no substantial existence. Most sensationalists begin by assuming the common-sense conception of a world of real things to be valid, as if the only problem were to show how this constant external order, by producing sensations in the mind, must at last produce a valid knowledge of itself. It never occurs to them that the validity of this common-sense conception is one of the great battle-grounds of philosophy, and that their own theory of knowledge has been shown again and again to be incompatible with that conception. These are points undreamed of; and if, by any chance, they should ever be brought up, they would be dismissed by a reference to common-sense. Common-sense, which is always pleased to be noticed, would forthwith take the sensationalists under its pachydermatous protection, and philosophy would be unspeakably advanced. But, since the time of Hume, it is needless to show that a pure sensationalism can never attain to a knowledge of a real world, but can only affirm a perfectly baseless becoming, in which no phenomenon conditions any other. Hume showed, once for all, that the law of causation and the reality and continuity of being must disappear from a logical sensationalism, and that nothing remains but groundless and discontinuous sensations. These are simply affections of our sensibility, and there is no reason why they come or go. Objective being is a bundle of

qualities, and subjective being is an aggregate of mental states. But, with this result, the objective world disappears altogether. For the qualities of which the world exists are, after all, only mental states, and have no existence apart from our sensibility. An attempt has been made to modify this result by speaking of permanent possibilities of sensation; but a possibility is nothing, unless founded in something. A possibility itself is simply a conception, and is, withal, one of the most unpicturable notions we possess. The phrase is simply an echo of the worst errors of scholasticism; and when these permanent possibilities are next introduced as the cause of the actual sensation, as is done by Mill in his psychological theory of the belief in an external world, there is no lower depth of confusion and unintelligibility. What a permanent possibility may mean, which is not founded in some real thing, defies all understanding; but how this background of possible sensations can be viewed as the cause of the actual sensation—that is, how the possibility of an odor and a flavor can be the cause of the yellow color of an orange—is probably unknowable, except to a mind which can see that two and two may make five. Finally, since everything is groundless and causation is exploded, the suggestion that sensations have a cause of any sort is causeless inconsistency. We conclude, then, that sensationalism is untenable as a theory of perception, so long as the object is assumed to have any reality or any ground in reality. We have next to inquire whether, apart from any question as to external reality, the mental work involved in knowledge does not imply an activity above any possible product of sensibility and association.

The demand for an activity beyond and above sensation is justified by the plainest facts of experience. Knowledge depends upon distinction and relation. Even our knowledge of sensation depends upon a discriminating and relating activity of the mind. The mere experience of a sensation as a mental state is by no means identical with our knowledge

of the sensation. The sensationalists have generally denied this, and have claimed that to have a sensation and to know the sensation are identical. Here is the weakest point of their psychological analysis, and one great source of their aberrations. For a sensation as a state of feeling is by no means necessarily a mental object. Before it can become such, the mind must at least discriminate it from itself as its own state. The rational life involves the conscious distinction of subject and object, and the simply sensitive life does not provide this distinction. But however this may be, our knowledge of sensation is not exhausted in the knowledge of the individual feeling. The most of our knowledge of sensations is a knowledge of them in their relations to one another; and as such it plainly depends on discrimination and comparison. Indeed, no sensation becomes a distinct object of knowledge until it is classified and related; and in order to this, it must be discriminated from the unlike and assimilated to the like. It is here we find the peculiar significance of attention which many would erect into a special faculty. Attention by no means consists in staring at the simple content of a sensation, but is an act of discrimination and relation. We attend to minute shades of likeness and unlikeness, and thus constitute our mental object. Until this is done, we have a feeling without definite content, and one to which we can give no definite place in our mental system. But this act of discrimination is not a fact of sensation, but an act upon sensation. The sensationalist relies upon the association of ideas to do this work. This principle is supposed to assimilate like sensations with like, and thus to discriminate them from the unlike. But, apart from the fact that the work here attributed to association is largely imaginary, the root of the matter is not reached. The mere coexistence of like and unlike states does not account for our experience of them as such. In themselves they are the classifiable rather than the classified, the distinguishable rather than the distinguished. Likeness or unlikeness in

experience is by no means the same as an experience of likeness or unlikeness. For this it is necessary that the subject of the two experiences shall distinguish and compare them, and, by noting its own state in the two experiences, discover the likeness or the unlikeness. Here, then, in these simplest experiences, we discover an activity of which simple sensibility and association give no account.

Again, when we view a complex but unfamiliar object, the same fact appears. We have a complete sensation, but we cannot tell what we have seen, owing to the failure to establish relations among its elements. Or when we look at a large number of objects, or a figure with many sides, we have the same result. The sensation is perfect, but knowledge is lacking. Nor is knowledge possible until the mind has reacted upon the sensation, and, by a process of counting and construction, mastered its significance. Doubtless the sensation connected with the vision of a decagon is as distinct as that connected with the vision of a triangle; but not until we have counted do we know that it is a decagon. In the case of the triangle, the construction is so brief and rapid that we fail to notice it; but in every complex figure the process is manifest. These facts cancel the attempt to identify sensation with our knowledge of sensation. The determination of relations, which is essential to all knowledge, is an act of judgment, and not a passive experience of the mind. Of course, these relations could not be determined unless the sensations were in themselves relatable and classifiable; but none the less is the relating act, or the recognition of these relations, something over and above sensibility. Hence we see in sensation itself a higher activity of judgment coming in to make our knowledge possible.

A still higher form of this activity appears in that transformation and interpretation of sensations which constitutes perception. When we see any object, we are not content to view it simply as a clump of sensations, although it can never be anything more for our sensibility. All we can

experience from it is certain affections of ourself; and there can never be the slightest reason on the sensational theory for distinguishing the object as something external to ourselves. But this only proves the doctrine untenable; for while to our sensibility the object is only a clump of sensations in the mind, to our thought it is more. It retreats behind its apparent qualities as their possessor and cause, and as having an existence and reality of its own. This substantive and causal notion, whereby the mind seeks to justify and rationalize its sense-experience, is not contained in sensation, but is the rational form which the mind contributes to sensation. It is indifferent to the present inquiry whether the idea represents anything external or not; it does exist as a mental principle, and as such is fundamental. If we cancel it, our entire thought-system collapses. If we deny it in reality, all the more must we affirm it as a mental principle. If we affirm it in externality, we can do it only on the warrant of the mind. In either case it is a mental principle. If there were a being capable of having sensations and of associating them as experienced, but incapable of any higher activity upon them, it would never reach the notion of cause and substance at all. No more would it reach the notion of quality. The noun, the adjective, and the verb would all alike be non-existent. But such a mind in connection with a fitting body would be able to lead a sentient life, and to care for itself in many respects as well as a rational being. Possibly the animals lead a life of this sort, purely sentient and without rationality. At all events, it is beyond doubt that a mind without an inner necessity of rationalizing its sensations would never reach the conception of cause and substance, no matter how real the outer world might be. Sensation in a purely sentient being would be merely a state of the being; but sensation in a rational being becomes the occasion of a rational construction resulting in knowledge. The reality of being and causation can be assured only by reason. All attempts to deduce them

from causation have ended either in nihilism or in calling something else by their name.

Besides these categories, the most prominent category in external perception is that of space, with its sub-categories of extension and distance; and around these some of the hottest contests between the sensationalist and the intuitionist have raged. The sensationalist insists that space is no original mental principle which conditions intuition, but only a product of sense-experience. The reflective intuitionist insists that however real space may be in fact, it must also exist as a mental principle in order that objective space should ever be known. The common-sense philosopher believes that space is real; but, from a fear of idealism, he is strongly averse to allowing mental forms and principles. Accordingly, he falls back on his notion of immediate knowledge, and ignores all questions.

The history of philosophy abounds in attempts to deduce the idea of space. The aim of these efforts has been double. Some have sought to show the significance and necessity of the space-idea in a rational scheme, and others have sought to deduce the idea as a product of the sensational mechanism. The Hegelians, especially, have attempted the former task. As Hegel proposed to deduce everything from the idea, it was necessary that he should show that space is a necessary implication of the idea. The aim was intelligible, but the execution was a failure. In the Hegelian philosophy, space appears as a discovery rather than a deduction. To be sure, it is not difficult to give space such names and functions as to make it fit into Hegel's system. If we first decide that the idea must pass into self-opposition, so that it becomes external to itself, it is easy to call space the form of this self-externality; but there is no proof that the idea demands just this form and no other. From this side, at least, space admits of no deduction. It is a fact to be recognized, not deduced.

The attempts to deduce the idea of space as a product of sense-experience have been numerous, and they are more in accordance with the present drift of psychological speculation than the view just mentioned. Herbart sought to show that any being whatever capable of having presentations must necessarily develop space as a mental form; but his success was due to a verbal ambiguity. The term "together" plays a most important part in his deduction. At the start, this term is to be metaphysically understood; but before the deduction ends, it returns to its natural spatial significance, and the demonstration is complete. When this ambiguity is carefully excluded, Herbart ends where he began; that is, with a somewhat unintelligible metaphysical "together," in which there is not the slightest trace of spatiality.

The English sensationalists who have essayed the same task have never clearly decided what they are trying to do. It is not clear, from what they say, whether they regard space and space-relations as real, or as having only a subjective existence. On this account, it is also not clear whether they seek to explain a knowledge of space as existing, or only as a peculiar form of mental illusion. A large part of what is said is an attempt to explain our knowledge of space as the result of sense-experience, without saying anything as to the reality of space. This part is throughout a begging of the question. Thus Mr. Mill supposes "two small bodies, A and B, sufficiently near together to admit of their being touched simultaneously, one with the right hand, the other with the left." We are then supposed to move a hand from A to B, and to become conscious of the muscular sensations which result. Thus we attain to the idea of space. He adds: "The sensation of muscular motion unimpeded constitutes our notion of empty space; and the sensation of muscular motion impeded constitutes that of filled space. Space is room—room for movement."* But throughout the

* "Examination of Sir William Hamilton's 'Philosophy,'" vol. i., pp. 280, 281.

argument from which these sentences are quoted, Mill is not sure whether muscular sensations are space, or only produce the idea of space. There is also throughout the argument a very free use of space terms which indeed serve to make it intelligible, but which also make it unpleasantly like some of the most characteristic utterances of that prince of sensational philosophers, Petitio Principii. If the two bodies, A and B, are in space, and the terms used imply that they are, the question is begged. To guard against this, we must carefully strike out all terms which imply space, such as movement, leaving A and passing to B; for these are ready to mislead us. We must restrict ourselves to purely temporal sensations, and from them develop a spatial order. We cannot, then, assume that A and B coexist in space, for this would beg the question. Coexistent sensations, like or unlike, are all that is given. Hence, when we pass from A, A no longer exists; and a return to A can only mean the recurrence of a similar sensation, and not a return to the same object. The coexistence of unlike sensations and the recurrence of similar sensations are all that is possible on the theory. Anything more gets in only by subreption. A time-order in sensation is all that is given, and we cannot advance beyond it without some new principle. In order to break up these sensations into fixed groups which shall look like things, we need the space-principle which we are seeking to deduce. Not even those complexes of phenomena to which the sensationalist seeks to reduce things are possible on his own theory. There is nothing to do but to declare that the time-order of sensations is space. Thus the deduction of the idea finally consists in calling a certain order of sensation space, and in assuring the student that space can mean nothing more. Unfortunately for the theory, the idea of space refuses to be identified in any way with any kind or amount of sensation. It is said, for example, that the declaration that A is distant from B means only that, having the sensation A, a certain amount of peculiar

sensations, called sensations of movement, must intervene in order to have the sensation B. This and similar statements describe a part of the fact well enough, but overlook the form under which we intuite the sensations. It is entirely possible that a being should have all the sensations accompanying movement without any tendency to give them a spatial significance; and, conversely, a being which does give his sensations such a significance must have an inherent tendency to do so. The space-intuition does not alter the character of the sensations, but it gives them a form which does not belong to them as sensations. It is always possible to describe the sense-experience in terms of sensation, real or expected; but the form which the mind gives to its experience defies such interpretation.

The sensational theory has been elaborated at painful length by Prof. Bain, but without adding anything to the argument, and also without escaping the tendency to beg the question which has always clung to this school. Mr. Walter, in his work, "Perception of Space and Matter," has made a lengthy criticism of the sensational doctrines of space, and has very clearly shown their inadequacy or inconsistency. In the course of time, psychologists will finally abandon as insoluble the question why the soul must intuite its objects under the form of space. They have long since abandoned the attempt to explain why a given nervous affection must result in a sensation of light, etc., and the question in hand is just as insoluble. The reason in both cases must be found in the inscrutable nature of the soul. If it be said that this is to abandon the problem, the answer is that insoluble problems ought to be abandoned. Circle-squarers contribute nothing to mathematics; and inventors of perpetual motors are of little service to practical mechanics.

The sensationalist view in strictness does not include the admission of space as a reality, but only its explanation as a special mental product, yet without allowing space as an original mental principle. The common-sense school are

equally averse from admitting space as a mental principle, while they insist with great emphasis on the reality of space. Their great appeal here, as elsewhere, is to the notion of immediate knowledge. Others, too, who hold the same view, are led to seek the distinction of a new name, and profess the "nativistic" doctrine of space. But a new name may mean a very old thing; and such is the case here. The notion is that things are really extended and in space, and that we immediately know them to be extended, and from the immediate knowledge of extension pass to our general conception of space. This view distinctly begs the question against those who hold the phenomenality of space. We have seen that extension can never be viewed as a predicate of real being without losing ourselves in the labyrinth of the infinite divisibility of matter, and thus making the notion of being an insoluble contradiction. We have also seen that extension is predicable only of aggregates, and then expresses only a certain order of relation among the component elements. But aggregates and their relations, as such, can exist only in the aggregating and relating thought. We might, then, appeal to the results of our discussion of space, and dismiss this view as both superficial and untenable. But we prefer another course at this point, not indeed as more conclusive, but as less liable to arouse the antagonism of uncritical common-sense. We may, then, allow the reality of space and extension without in any way dispensing with the need of space as a mental principle, in order to make a knowledge of this objective space possible.

We have frequently pointed out in the course of this chapter that immediate knowledge does not dispense with a constructive activity on the part of the soul, but is only that knowledge which results from the direct interaction of the self and the not-self. This not-self, however, even on the realistic theory, is not the object perceived, but only the nervous system. This system, moreover, is never directly known in any case; and even now the proof that the nerves are con-

cerned in our knowing is a very indirect one. Underlying this theory of common-sense, there is first an oversight of all the actual conditions of perception, and a kind of fancy that the mind as a sort of ethereal essence fills out the body, and comes in direct contact with the surface of things. Many fancy that all difficulty is removed if we regard the soul itself as extended. We have only to think of the soul as extended to get a clear insight into the spatial perception of things. Some, indeed, go so far as stoutly to affirm that a perception of the extended by the unextended is a contradiction. A curious whimsey underlies this notion. It is that the perceptive act has the properties of the things perceived. Accordingly, the thought of the extended must itself be extended. The thought of the sphere must be spherical, and the thought of the triangle must be three-cornered. Hence, of course, the soul must have a certain volume in which to hold such knowledge without letting the corners stick out. The crudity of this whimsey renders criticism unnecessary. The perceptive act, and the knowledge acquired by it, have none of the properties which belong to the objects known. Or we may say in general that the content of a thought is not to be confounded with the thought considered as a mental act. The thought of space has extension for its content, but the thought is not extended. The thought of the heavy is not heavy, and the thought of the sweet is not sweet. In addition to this whimsey, the claim that the knowledge of extension is impossible to the unextended rests implicitly on the assumption that the point is the only antithesis of extension; whereas the point itself is a space-term, and denies space spatially. In fact, thought is neither in a point nor out of a point; but is simply and purely thought, to which space-predicates have no application. It must be judged and measured solely by its own standards of grasp and intensity.

Again, if we should allow the soul to be extended as a thing in space, the problem is not advanced. Only the un-

critical imagination finds any aid in such a notion. By considering the soul as an extended something, the fancy finds it easy to conceive of extended outlines drawn upon the soul's surface, and then it rests satisfied. The difficulty connected with the third dimension is met, of course, by viewing the soul as a solid rather than a plane surface. This is the same notion which underlies the belief that the picture on the retina removes all the mystery of vision. In the latter case, we mistake our own vision of the picture on the retina for a perception of the object by the mind back of the retina. Similarly with the extended outlines on the soul, we mistake our own fancied perception of them on the walls of an objective soul for the perception of them by the soul itself. But the problem is, not to account for impressions on an extended soul, but for the knowledge of space in thought, and, however extended the soul may be as a thing, as a knowing subject it has no extension, and knowledge has no extension. Space in thought is no easier on the hypothesis of an extended soul than on any other.

The next point to be insisted on is one with which we are already familiar. The mere existence of a thing, we have said, does not explain its perception. This implies the further statement that the existence of a thing as such or such does not explain its perception as such or such. To perceive a thing, it must act upon us; and to perceive a thing as this or that, it must act in a manner corresponding thereto. But space itself does not act upon us; only things act. Hence, our knowledge of space must be gathered from the activities of things. But these activities themselves have no spatial properties. They vary in intensity and duration, but they have no form or other spatial attributes. Such expressions as square or round or crooked or solid activities are seen at once as absurd, when used in a literal sense. Even the coarsest form of the atomic theory allows that there is no such thing as spatial contact of being with being, and that all connection is mediated by a dynamic interaction.

With this admission, it becomes apparent that the extension of a thing never acts as such, but is replaced by a certain dynamic intensity, just as, in painting, distance and solidity are replaced by light, shade, and perspective. It follows, further, that differences in form, distance, and extension can be manifested only in varying intensities of non-spatial activities. When this insight is reached, the notion of a passive perception of extension vanishes utterly. The antecedents of the perception of extension are totally unlike extension, and if they are ever to become extension again, it can be only as the mind reconstructs these antecedents into their spatial forms. The arrangement of lines and pigments which make a picture is not itself a landscape, and never can become one, yet the mind can read this arrangement back into a landscape. But, just as we pass from daubs of paint to what they mean only through a constructive action of the mind, so, also, we pass from the varying intensities of sensation to their spatial significance only through a constructive activity of the mind. We object, then, to the theory of an immediate knowledge of space-elements, not that it is false, but that it falsely assumes to have disproved the necessity of regarding space as a mental principle, as well as an objective fact. We conclude, then, that if the mind had no inherent tendency to bring certain of its objects into the forms of space-intuition, the knowledge of space could never arise, no matter how real space might be. To the question, Why do we see things in space? the common-sense philosopher has thought it sufficient to say, We see things in space because they are in space. The insufficiency of this answer is apparent.

A final form of the "nativistic" theory must be mentioned. It has been held by some that, in sensation, we have an immediate knowledge of extension, and that this is enough to account for our conception of space. Given the simple experience of extension, we need posit no peculiar mental activity to account for our complete conception of

space and its relations. It is even alleged that our sensations themselves are extended, and are distinctly known as such. This view of sensation we regard as totally false. As a spiritual affection, it can have no extension. A square or oblong or circular sensation is an expression to which no one can attach any meaning who does not identify sensations with external objects. The utmost that could be claimed is, that every sensation carries with it a distinct reference to an extended cause without us. This would bring us back to the common view of immediacy of spatial perception. We have already seen that this immediacy itself rests upon a peculiar factor in the mind; but if this factor did nothing more than produce a feeling of an extended object, we should certainly never attain to our present conception of space. If a mind should really have experience of many extended objects, there would be nothing in that fact to bring them into further relations. They would all be alike as to extension, but they would not exist in a common space. The bare fact of being all extended would be compatible with their existence each in a separate and incommensurable space; just as the products of imagination exist in unrelated spaces. Nor can they ever come together into a common space until the mind brings them into it. By its unifying and co-ordinating act, it must assign to each its relative place in our space-vision; and until this is done thought has not reached the unity of space, and, however much knowledge we might have of extended individuals, we would have no ground for saying that these must all exist in one and the same space. But the mind is under the necessity of having no unrelated objects in intuition as well as in reflection. Hence it is forced to relate its objects to one another in intuition, and the result is our complete space-intuition, in which everything is related to everything else, and has its proper place. We know that things are all in one space only because we relate all things in a common scheme of intuition, and according to a common rule. But

this, again, is only the expression of an inherent factor in the soul, or an apriori mental principle. This locating and co-ordinating of its objects in a common intuition is the essential space-activity of the soul.

The conception of space as a unit is, doubtless, a product of abstraction from the results of this relating activity. We do not claim that we start with any conception of space whatever, and, least of all, that space is originally known as one, and infinite, etc. But the soul has the necessity of relating all its objects in intuition, and hence, whenever any new point is posited, it at once relates it to all other points. But the positing of points is possible in all directions, and thus arises the conception of a space extending equally on all sides. There is, too, no inner reason why the positing of points should cease at any point whatever. The process is capable of indefinite repetition, like a recurring series in algebra, and thus arises the notion of space extending indefinitely on all sides. No point can be posited in imagination which will not be immediately related to all other points, or to the system of points; and thus arises the conception of one and all-embracing space. The conceptions of full and empty space are born of experience.

Finally, this conception of the space-activity as consisting in a peculiar form of relating the manifold throws doubt on the assumed possibility of a consciousness of extension without any relating activity. Certainly, if the conception of extension involves a relation of different parts—as of inner and outer, right and left, top and bottom—or a distinction of points as adjacent and separate, the consciousness of extension is impossible, without the spatial activity of the mind. It equally follows that a single point or object can never be known as in space. There can be no relation with only one member; and if space be only a special form of relation, it can exist only as the related members exist. In that case, the knowledge of extension would itself be an outcome of the space-activity, and not its foundation.

Thus we have sought to justify the claim that perception is an active and constructive process on the part of the mind, and that the norms of this process are laws of the mind itself. We have seen that a simply sensitive mind could never attain to rationality or even to externality, and that a comparing, discriminating, and relating activity is the basis of all thought, and hence the basis of all knowledge. We conclude that knowledge is not a process in the mind, but an act of the mind. The detailed steps of the process we leave to inductive psychology. We have previously remarked that it is conceivable that there should be no sensation in knowledge; but that the action of the object on the soul should lead to a pure perception without any feeling. In that case, perception would be as devoid of sensation as is abstract thought. It is equally possible that all perception should be immediate, and none of it derived from processes of judgment. The relation between the object and the mind might be such that we should at once perceive it as it is, and where it is. But this is not the case. We learn to perceive. Our judgments of size and distance are all acquired from experience. The most of our sense-perception is based on an automatic interpretation of sense-signs which we have learned. Here emerges the possibility of sense-illusions. When any nervous sign which we have been accustomed to associate with a given thing is produced by disease, or in any uncommon way, we perceive the object which in our normal experience belongs to that sign. Delusions of this kind are not possible until sense-experience has acquired some consistency and fixedness. On the other hand, experience could never acquire any fixedness if cases of this kind were common. There must be no general confusion of excitations if an orderly mental life is to be possible. Again, when there is a slight variation in the conditions of our sense-experience, the result is untrustworthy until rectified by further experience. Hence when we remove to a clearer atmosphere, our judgments of size and

distance are all at sea. Accurate judgments of distance by water are impossible to one who has dwelt always on the land. Even a low temperature on a clear morning suffices to give a sharper outline to distant objects and thus to modify our judgment both of size and distance. These facts bring into prominence the great part which judgment and association play in sense-perception. They also prove that perception is not an immediate contact with the object, but rather a construction of the object. Certain elements only are given and the mind is left to build.

Sensation, then, is the excitation against which the mind reacts with perception. But not all sensations are equally adapted to lead to perception. Sight and touch and some of the feelings which attend muscular movement are almost the exclusive sources of our knowledge of the outer world. It is indeed conceivable that all of our senses should have been equally perceptive, but such is not the case. It is doubtful if a man with only ears and nose would ever advance beyond a confused objectivity or sense of something not himself. Eyes, too, without the possibility of touch and movement would probably lead no further than this. There would be nothing in either of these cases which could lead to our present world-vision of things distributed in space and diverse in form and number. We do not, then, view the categories as unconditionally evoked by any and every sense-experience; we rather hold that a specific and peculiar experience is needed to evoke any one of them. This is especially the case with regard to space. It is quite conceivable that a mind like our own, which should have experiences only of odors and sounds and pains, might never come to the conception of space at all. It would refer its experiences to a cause not spatially external, but ontologically diverse, and it would be able to classify them and reflect upon them. It might discover various laws of sequence among them, and be able to read the past and the future with great accuracy. But none of these experiences

would contain any ground for a spatial intuition of its objects. The mind can be roused to this only by particular forms and sequences of sensation. To discover these forms and their physiological ground is the province of physiological psychology. It will never be possible, however, to learn more than the form of the fact; and this form will always have a contingent character. Certain physical movements are attended by sensation; but no one knows how or why. So also certain forms, and only certain forms, of sensation are attended by a space-construction; but no one knows how or why. In both cases we come down to an order of fact of which we can give no account.

We come here to an assumption which every theory has to make. Objective knowledge rests upon an interaction of the self with the not-self; and as such, it must be subject to law. In speaking of interaction in general, we pointed out that it demands exact adjustment between the interacting things. Otherwise like antecedents would have unlike consequents, and chaos would result. Unless we are to resign perception to be a mere hap-hazard process, we must extend the same notion of adjustment to it. So far as the interaction extends, a given state of the physical series demands a corresponding state of the mental series; and this order must be viewed as unchangeable. But we also saw that if this parallelism were made universal, we should fall into the scepticism which necessarily results from the doctrine of an all-embracing pre-established harmony. We must have law and uniformity in the elements of the interaction, or all is fortuitous. But if we affirm necessity of the entire process, there is no explanation of error which will not at the same time overturn truth. The only way out of the difficulty is to admit that in perception the elements of the interaction between the ego and the non-ego are fixed, but may be differently combined. They constitute the alphabet of knowledge; but in their combination an element of wilfulness or carelessness may appear and

unite them in ways foreign to the truth of things. What must be allowed for the perceptive process in general must also be allowed for the intuition of things in space. Certain definite forms of sensation allow only a fixed space-construction. The sensation from which we construct the vision of a triangle is incompatible with the vision of a sphere. It is highly probable that the sensations of vision, touch, and movement are likewise shut up to fixed space-representations, so far as they are represented at all. Without some such general assumption, not even the doctrine of local signs throws the least light upon the problem. If the local sign presupposes a knowledge of location, it is a pure superfluity as to the question in hand. If it be only a sensation qualitatively distinct from others, it contains in itself not the least reference to space, but can only be the incitement against which the soul reacts with a space-construction. All we can hope to do, therefore, is to find not why sensations are spatially interpreted, but what sensations lead to such interpretation.

CHAPTER III.

REALISM, IDEALISM, AND PHENOMENALISM.

In the progress of our studies, our thoughts about things have undergone various transformations; but it has not occurred to us to doubt that things exist in some form in external reality. Possibly the thing may be only a form of divine energizing; possibly it may be such a hard and fast reality as common-sense assumes; but in either case it has an objective existence. But the results of the last chapter cannot fail to shake this natural faith. We came to the conclusion that the outer world is revealed to us only through sensation, and that if this order of sensation were maintained in us apart from any action of the world, the world might fall away without our missing it. Moreover, our thought of the outer world is made up entirely of subjective elements. The sense-elements of knowledge are universally admitted to be only objectified affections of the soul; while the rational elements of knowledge, as lying outside of any possible sense-experience, are entirely contributed by the mind itself. The mind must build the world out of its own states and ideas. The sensationalist allows it only sensations as the material for its world-construction. The intuitionist adds a certain outfit of apriori ideas; but neither school escapes the need of constructing the objective world out of subjective elements. But if the content of the thought be thus subjective, may not the thing also be only a mental product? In addition, we must remember that perception comes under the general head of

interaction, and that our world-vision must be an effect in us. But what shall assure us that the external cause of this effect is anything like the effect? Analysis has shown us that all that we receive from the outer world is certain sensations, against which the mind reacts by constructing in itself a world-vision. All that we theoretically need, then, is an objective ground of our sensations; and this objective ground turns out to be not the object as perceived, but the all-enfolding God. Thus the world of perception threatens to disappear from reality and become only an effect in us. This brings us to consider the nature of the object in perception. Has it an ontological, or only a phenomenal reality?

This question as to the reality of the object in perception must be carefully distinguished from this other question, Is there an objective reality? The common conception of idealism is that it does nothing but raise the latter question; and a good part of realistic polemics is based on the confusion. Thus many realists have thought to overthrow idealism by pointing out that in our sense-experience we find ourselves coerced and resisted by something not ourselves. This fact would be conclusive if the aim were to prove the existence of something besides ourselves; but this no one doubts. Berkeley affirmed an objective and spiritual ground of our sensations as an absolute necessity of thought. He questioned only the external existence of the object in perception, and reduced it to an effect in us. But this question cannot be decided by appealing to the fact that we are conditioned in our sense-experience and objective effort. The idealist who understands his own system is as far as the realist from claiming that all existence is a mode of his own imagination. Every one knows that in sensation he is conditioned by something not himself. If asked how we know it, the answer is that no one knows how he knows it, but every one knows that he knows it. There will always be at the foundation of our mental life propositions which cannot

be mediated or deduced. Acceptance or rejection alone is possible. Hence the question how we know a thing has meaning only when the knowledge is mediate and inferential; to immediate knowledge it has no application. In like manner, the demand for proof has application only to derived knowledge. If there be anything of which we are immediately certain, proof is both impossible and superfluous. The necessity in the present case is indeed only a necessity of fact, but it is none the less cogent. There is no contradiction in solipsism, but it is none the less impossible. No one can regard himself as the universe. What we cannot help doing must be done; and we cannot help admitting that we are conditioned by something not ourselves. Both idealist and realist are forced to admit an objective ground of our sensations; and both are equally far from regarding them as arbitrary fancies of our own. Hence, instead of the question, Is there reality? the idealist rather asks, What is the real and what its true nature? In opposition to technical realism, he questions whether the object in perception is of such a kind as to be capable of real existence.

Again, the dispute between the idealist and the realist in no way concerns the phenomenal world. For both alike phenomena have an external cause; and the same phenomena may exist for both and in the same order. Even the Berkeleian idealist regards the order of phenomena as constant, and views given phenomena as the permanent sign of the possibility of other phenomena. Berkeley himself insisted upon this point so strongly and so frequently that it is inconceivable that any presumably rational beings could have thought it relevant to urge him to knock his head against a post, or to thrust his hand into a fire. Our entire sense-experience can be consistently and sufficiently expressed in terms of sensation, actual or expected; and all that is needed for the guidance of conduct is to know that the combinations and sequences of sensation have a fixed order. With this knowledge the most pronounced idealist is practically as

wise as the most fanatical realist. The question is not as to the nature and laws of phenomena, but concerns solely their interpretation. From this standpoint it is plain that the senses themselves can never settle the question; for the debate lies beyond their realm. It is also plain that the idealist is not to be charged with distrusting the senses. He admits as unquestionable all that the senses give; but he denies that they give as much as the realist assumes. All that the senses can give is coexistent or sequent orders of sensation. To our sensibility a thing is only a clump of sense-qualities. The realist declares that a law of thought forces him to assume something more. The idealist allows the claim, but adds that the nature and position of that something more form the point in dispute. The idealist believes in reality as much as the realist himself. They differ not on the fact of reality, but on its nature and location. The decision between them cannot be reached by appeals to the senses, but only by consistent thinking. We pass to the discussion.

Three views are possible concerning the object in perception. We may regard it (1) as a thing in the common meaning of the term; (2) as a phenomenon of an objective fact of some kind; and (3) as only an effect in us. In the first case, we have the common realism; in the second, we have phenomenalism or objective idealism; in the third, we have subjective idealism. We consider the last view first.

At first glance subjective idealism appears to be the simplest and best-founded theory. The demand for a sufficient reason is fully met by providing an objective and spiritual ground as the cause of our sensations, and by referring to the constructive action of the mind whereby the object is built up in thought. These two factors suffice to explain all the facts. An effect is observed and referred to its adequate causes; and what more can we ask of any theory? This view is certainly possible. Our world-vision, considered simply as a fact in our minds, not only does not need anything more for its explanation, but it must be explained in

this way, even by the most realistic thinkers. We are forced to this admission by the fact that every theory of perception must bring the process under the law of interaction, and that the outer world at most only contributes certain unpicturable affections of ourselves, which have to be built into form by the mind before perception is reached. The view, too, is not only possible, but it admits of no psychological or metaphysical disproof. Some have sought to disprove it by referring to the distinction of subject and object. The subject and object, it is said, are given in necessary antithesis, and consciousness vouches equally for both. But this mistakes a mental form for an ontological fact. There can, indeed, be no thought or proper consciousness without the distinction of subject and object; but this does not imply that the object is a proper thing and ontologically diverse from the subject. We have the same form of objectivity in dreams, but certainly the objects in dreams are not metaphysical realities. Much of the argument against idealism, based on this distinction and the necessary correlation of subject and object, is of so crude a kind as to suggest that the writers conceive the subject to be the body and the objects to be other bodies, and then seek to prove that the surrounding bodies are as real as our own. It has also been urged that we find ourselves resisted and coerced in our objective experience, and that thus the reality of the object is assured. This would be relevant if the question were to prove that there is some reality beyond the individual self; but it has no bearing upon the reality of the object in perception, unless we once more identify the subject with the organism, and the object with surrounding bodies. Kant attempts a disproof of subjective idealism in the second edition of the "Critique," but even his argument rests mainly upon confounding our general conditionedness in external experience with the reality of the perceived object. The lack of logical connection is plain. The ground of our presentations is external. We cannot have them at will

nor dismiss them at our pleasure. We are, then, conditioned in this respect; but it does not follow that our presentations are anything more than effects in us. Kant further argues, in expounding the analogies of experience, that the possibility of physics depends on the principle that substance is real and permanent. In all changes of phenomena substance must be assumed permanent, and the quantity thereof in nature can be neither increased nor diminished. Hence, Kant concludes that subjective idealism, by denying substance, wrecks science, and hence must be false. But this argument is doubly a failure. It is directed against the idealist as empiricist and not as metaphysician. The psychology and theory of knowledge of many idealists, notably in the case of Berkeley, have been very imperfect and often mistaken; but this fact does not affect their metaphysics. And, after all Kant's argument, it turns out that this permanent and indestructible substance is, even in his own system, only a mental function, and not a fact of reality. For him, things are only syntheses of sense-qualities under the form of permanence; they are in no sense proper substances. It is possible for the subjective idealist to adopt Kant's general theory of knowledge and retain his own metaphysical conclusion. Indeed, they agree so nearly in their metaphysics that Kant's attempt to disprove idealism has very generally been regarded as a grave inconsequence. Finally, Kant's charge that idealism would make science impossible is especially unfortunate; for it would overturn science in no other sense than Kant's own system does. If Kant's theory be true, at least nine tenths of our theoretical science is illusion. The entire universe of forces and substances, of atoms and ethers, disappears. These things become only the way in which the mind represents to itself the inscrutable ground of cosmic movement and manifestation. They are mental products, and have only a mental existence. Berkeley himself would scarcely take us further. Both views admit of practical science, and conflict only with theoretical

science. If there be an infinite spirit, which embraces all finite spirits and furnishes them with sense-experiences in a fixed and orderly way, it is still a most useful and necessary work to study the orders of coexistence and sequence in our experiences. Knowing this order, we shall be practically as wise as the wisest, and shall be in a position to reap the best possible results of practical science. We might have the greatest enthusiasm for the working methods of science, and first detect traces of lukewarmness when it should be proposed to regard the devices of method as ontological facts.

Do we, then, accept subjective idealism? Not yet. We have only pointed out that it cannot be psychologically or metaphysically disproved. No consideration of the process of perception, or of the apparent immediateness and self-sufficiency of our knowledge, will avail to disprove the doctrine. If, then, the only aim were to explain our world-vision as a fact in us, we should have no reason for affirming any objective reality besides the infinite. But this world-vision is not only an effect, it also claims to be a revelation of facts beyond ourselves, and this claim must be considered. Possibly we shall find in the content of the facts thus revealed some ground for viewing them as real.

The fact mentioned in the opening paragraph of the chapter, that the content of our thought of the world is made up of subjective elements, is in itself indecisive, as this must be so in any case. No matter how real the world may be, it can be known to us only through thought, and this thought must be a subjective product. Some idealists have thoughtlessly urged this necessity as an argument for idealism; but its legitimate outcome is solitary egoism, for our thought of persons, other than ourselves, is as purely a subjective product as our thought of things other than ourselves. But no philosopher is allowed to disgrace philosophy by making it farcical. Hence every speculator is under obligations to good taste and good faith to accept as an un-

doubted fact the coexistence of others like himself. To question this is to reduce philosophy to a low and disingenuous farce, and to justify the contempt of every earnest mind. We say disingenuous because every such speculator forthwith seeks to induce others to accept his views, although by hypothesis they are only fancies of his own. Of course this admission of personality does not imply the admission of substantial corporeality, but only of the thinking and feeling self. Here, then, is one class of things of such a kind as to assure us of their objectivity.

But brave as are these words about disingenuous farces, they do not serve to repress the question as to the real ground of our faith in the existence of other persons like ourselves. We have seen that the infinite mediates all interaction of the finite, and hence that all affections of ourselves are immediately from the infinite. God is the cause of causes and the true objective ground of our changing states. But if these states were given in their present order, we should as certainly construct a world of persons as we do a world of things. If the world of persons should drop away, we should never miss them, but should continue to have the same apparent personal interaction and communion which we have at present. If, then, God had any interest in deceiving us, he could as easily impose upon us an unreal world of persons as an unreal world of things, and in neither case would there be any psychological or metaphysical method of detecting the deceit. What, then, is the real ground for admitting the existence of persons? We may refer the belief to instinct; but this is only to decline the question while seeming to answer it. Besides, if we allowed the answer, the question would renew itself in the further inquiry, What ground have we for trusting our instincts? The true reason can be found neither in psychology nor in metaphysics, but only in ethics. Our belief rests ultimately upon the conviction that it would be morally unbecoming on the part of God to subject us to any such

measureless and systematic deceit. We conclude, then, (1) that the infinite is more certainly known than the objective finite; (2) that perception is essentially a revelation by the infinite to the finite; and (3) that faith in the revelation must be based on an ethical faith in the revelator. Hence, although our thoughts of persons other than ourselves are purely subjective products, and although the existence of such persons is by no means necessary to explain our mental state, we still regard such persons as really existing, not, however, because of the psychologic necessity of the admission, but because of the ethical absurdity of the denial. And for the validity of all objective knowledge of the finite we are shut up either to faith in God or to a blind and irrational instinct.

It seems, then, that we are clear of idealism; for if we trust our faculties when they reveal a world of persons like ourselves, why should we not trust them when they reveal a world of things? How can we throw doubt upon one result without also throwing doubt upon the other? We have broken through the claim that objects do not exist because our perception of them is only an effect in us. In one case we have found ourselves compelled to affirm that the objects have real existence. Hence, the questions just asked would be conclusive against an idealism based simply upon the process of perception, and not upon the nature of the product. In that case any discrimination against one class of objects would be purely arbitrary, and the system could be held only by volition. It is of no use to say that persons are not objects of perception such as things are; for, so far as the knowing process is concerned, both stand on the same ground. Neither persons nor things are perceived by the senses; but upon occasion of certain subjective affections we posit persons or things as their objective ground. Hence the idealist must change his line of argument. It is not enough to show that our objects are thought-constructions; for they must be this in any case. He must rather show

that the affirmation of things, in the common-sense of the term, is not only not necessary but is inconsistent, or that the so-called material world is seen upon reflection and analysis to be incapable of existence apart from thought. That is, the idealist must base his conclusion upon an analysis of the product of perception rather than upon the process. We assume, then, with common-sense, that the world of things does not depend on our thinking, but is in itself a fact of some sort, and ask only what kind of a fact it is. Is it such a fact as it seems to be, or something quite different? Meanwhile the debate with the subjective idealist will lie over.

Allowing the world to be in itself a fact of some kind, two views are possible concerning its nature. The realist's position is this: The system of the world is a complex of substantial things which are endowed with various forces, and which are the real and constant factor in the changes of phenomena. As such they exist apart from any thought, and when we perceive them we add nothing, but recognize what they are. This is the view of common-sense, and if analysis detected no difficulties and inconsistencies in it, it must be allowed to stand. The idealist, on the other hand, thinks as follows: We think under the law of substance and attribute, or of thing and quality. Both thought and language are impossible without nouns as the independent base of the sentence. Accordingly, we tend to give a substantive form to every object of thought. So we speak of gravitation, electricity, magnetism, etc., as agents or things; and it is not until we reflect that we perceive that they are forms of agency only. Indeed, every constant phenomenon tends to be viewed as a thing. Now the world owes its substantial existence entirely to this tendency. This substantive character is merely the form under which certain objective activities of the infinite appear to us. The idealist, then, proposes to replace the nouns of realism by certain constant forms of activity on the part of the infinite. Change in

things he views as a change in these forms. Progress he views as a higher form of this activity. There are no fixed points of being in the material world; but everywhere there are law and order. The continuity of the system expresses simply the constancy of the divine action. The uniformity of the system expresses the steadiness of the divine purpose. In short, the world, considered in itself, is an order of divine energizing, which, when viewed under the forms of space and time, of causality and substance, appears as a world of things. In distinction from subjective idealism, this view may be called objective idealism. The former does not allow the world to be an objective fact, but only a series of presentations in us; the latter allows it to be an objective fact, but holds that it cannot exist as it appears apart from mind.

The realistic view is, of course, more harmonious with spontaneous thought than the idealistic view, but it properly has no advantage, except for the imagination. It is more easily pictured than idealism, but both views are equally compatible with phenomena and with objective science. We have seen that even subjective idealism is compatible with science, so far as the latter deals with phenomena and eschews metaphysics, while objective idealism allows all the facts even of scientific metaphysics to stand, and seeks only to go deeper. It allows the atom and its laws, and suggests only that the atom, though the basis of physical science, may itself be phenomenal of some basal fact. Thus all the principles of physical science remain undisturbed, although they may be referred to something behind them, and which is the reality in them. But, even if the principles of objective science were disturbed, it would not follow that idealism is false, for there is no warrant for making the possibility of physics the final test of truth. The imagination will find more assurance of the uniformity of nature in the hard reality of the physical elements than in the purpose and nature of the infinite; but, in any case, this is a fancy.

We have seen that the finite, of whatever kind, comes into existence, and remains there, only because of the demands of the system. This is as true of the material elements as of anything else. Hence, we have no ontological assurance of the uniformity of nature in any respect. For all that we know, the most unimaginable revolution may take place at any moment, and in the most unimaginable way. For knowledge on this point, we must have either a revelation from the infinite or a perfect intuition of its nature and tendency. Hence the uniformity of nature can never have any foundation better than the constancy of the purpose and nature of the infinite. Both views, then, are possible. To decide between them, we must analyze the nature of the object known. In general, this was the course taken by Berkeley. The chief part of his polemic against matter consisted in showing that matter, as then conceived, could not exist apart from mind. On the basis of Locke's philosophy, this was very easy work; for, according to Locke, material substance was only a complex of simple sensations, and hence, in logic, it was capable of existing only in sensibility. Again, matter was then conceived as pure passivity and inertness. Berkeley pointed out that matter, as thus conceived, would account for nothing, and could only be an idea. It is in this analysis of the object that Berkeley is at his best, and it is here that the strength of his argument lies. It must be allowed that no empirical philosophy can escape his conclusion.

In analyzing the object, we point out, in the first place, that the sense-qualities of things are generally regarded as having only subjective existence. Spontaneous common-sense regards heat, color, etc., as immediate qualities of the object; but this view has long been abandoned. Nor do we rest this conclusion on the fact that every such quality is primarily a reaction of our sensibility against external action. This is the case with all knowledge, and does not exclude the possibility that the subjective quality may also be

a quality of the thing. Nor does the complicated mechanism of nerves and vibrations exclude the same possibility. These, again, might be the machinery whereby we become aware of the true qualities of things. We have an illustration of this possibility in the communication of thought by language. The airy waves and nervous vibrations have nothing in common with the thought from which they proceed, and yet they result in the reproduction of that thought. The real ground of the doctrine lies (1) in the general teachings of physics, which leave no place for sense-qualities, except as effects in sensitive beings; and (2) in the fact that these qualities are without significance when conceived as existing apart from sensibility. How a thing tastes when it is tasted, or feels when it is felt, is revealed in our sensations; but how it tastes when it is not tasted, or feels when it is not felt, is a problem without any meaning. A toothache which no one feels is just as possible as a sight which no one sees. Tastes and odors, sights and sounds, have no assignable meaning apart from a sensitive subject. All that can be said of the object is, that it is such as to be capable of producing these sensations in us under the proper circumstances. When the thing is seen, it will produce in us a sensation of color. When it is felt, it will produce in us certain tactile sensations. When it is tasted, it will produce certain sensations of taste. What it must be to do this is partly revealed by physical science. The body which is to appear with a certain color must be able to set the ether in vibration in a certain definite way. The body which is to produce sensations of taste must cause certain chemical or electric changes in the proper organs. The sensations themselves, however, are purely and only subjective. In itself, the world is neither light nor dark, neither sounding nor silent, neither sweet nor bitter, neither hard nor soft, but such that it produces these phenomena in us under the proper conditions. All that the realist can mean by affirming that these qualities are there apart from our experience

is, that they are there for every one who fulfils the conditions; and this universality he mistakes for objectivity. Light, sound, odor, etc., in the proper psychological significance, are contributed to the world by the mind; and, apart from the mind, the world cannot exist as luminous, resonant, odorous. If, then, the object be only a complex of sense-qualities, as the sensationalists maintain, Berkeley's subjective idealism is a demonstrable necessity.

So much the realist admits. The secondary qualities of matter he hands over to subjectivity. They are only effects in us, and have no claim to reproduce their cause. The familiar fact of color-blindness shows that the same object may have different apparent colors. Hence sense-qualities are not only effects; they are also contingent upon the state of our nerves. But there is a universal element in perception. In the so-called primary qualities of matter we come upon something which is independent of our thought and organization. Here, then, the realist makes another stand, but without success. These primary qualities are those which are based upon the relation of things to space, such as extension, form, space-filling, etc. These qualities, the realist holds, are recognized, not constituted, by the mind. But, in our discussion of space, we found that space, and all its sub-categories of size, extension, and distance, have only a subjective existence. They are the form which non-spatial realities take on in intuition. The realist's claim that there is a universal element in perception may be allowed, without in any way admitting that that element is independent of thought. We have seen that relations in general are incapable of objective existence; that they exist, and can exist, only in the relating act of thought. Hence the world, as a great system of relations—that is, as the object of science and of all rational study—cannot possibly exist apart from thought. It has its character of spatiality and inter-relatedness only in the mind and in the movement of thought. What was said of the world as luminous, etc.,

must be repeated of the world as a system of relations; it cannot exist apart from mind. When the realist attempts to escape this by saying that the mind recognizes relations, but does not make them, all that he can maintain is, that there is a universal element in the relations. Those relations do not exist for the thought of one alone, but for the thought of all. They are, then, not individual, but belong to reason itself. This we not only allow, but we also steadfastly affirm. But the realist curiously confuses universality in thought with independence of thought, and thinks to secure the former only by affirming the latter. The difference, however, is very great. All relations, as such, are products of thinking, and exist only in the act of thought.

It only remains that the realist take his stand on the substantiality of the physical world. Whatever it may not be, it at least is real and substantial. In this element of substantiality the realist puts the great difference between himself and the idealist. For the latter, things are only phenomena, while for the former they are also things in themselves. For the latter, the only existence in things apart from thought is the system of activities on the part of the infinite; for the former, things have real existence apart from any thought. Herein the realist fancies that he has a great practical advantage over the idealist; but the advantage is, in fact, only a relief to the imagination. In particular, he fancies that he has a better explanation of the permanent possibility of sensation which is found in sense-experience. When certain conditions are fulfilled, certain phenomena are present to us. By varying the conditions we vary the phenomena, and by restoring the conditions we restore the phenomena. Hence, under given conditions, there is what Mill called a permanent possibility of sensation, but which would better be called a permanent possibility of phenomena. But it is hard to see in what this possibility is better explained by the impersonal thing than by the constant activity of the infinite, especially as, without an

activity of the infinite, the impersonal thing would never affect us at all. Permanence and universality are, at least, as well accounted for by the idealist as by the realist. Indeed, the latter has to make just as many demands upon the infinite as the former, while the thing which he posits in addition is only a new element of perplexity.

Finally, we must recall what we found in our discussion of change. We were there concerned to see how we could possibly reconcile change and identity. We are accustomed to speak of things with changing states, and we apply the notion without any question of its validity. But when we inquired as to its use, we found to our surprise that it applies only to the personal. The impersonal is simply and solely process and law. Permanence and proper existence can be found only in spirit. These conclusions must be applied here. The question of the substantiality of the physical world reduces to the question of the substantiality of the physical elements. If these are impersonal, they can only be flowing processes of the infinite. On the other hand, there is no warrant for attributing to them personality of any kind. The fancy to which we yielded in discussing materialism, that the elements may be alive and have a true subjectivity, is utterly groundless. The only thing which leads to it is the purpose to explain mentality by materiality, and this makes it necessary to include mentality in the notion of materiality. For the rest, the notion is a gratuitous embarrassment in every respect. In discussing matter and force, we saw the difficulties which attend the atomic theory of matter viewed as an ontological fact, and we decided for the view that the elements are not properly things, but only constant forms of the action of the infinite according to fixed laws. In addition, the discussion of interaction has shown that the impersonal finite can lay no claim to existence. For, as impersonal, it is without subjectivity; and as finite, its objective action is mediated by the infinite, that is, it is done by the infinite. It has, then,

no longer any reason for existence; and there is no longer any ground for affirming its existence. It does nothing, and is nothing but a form of thought based upon the activity of something not itself. This view we reproduce as our final verdict. Matter and material things have no ontological, but only a phenomenal, existence. Their necessary dependence and lack of all subjectivity make it impossible to view them as capable of other than phenomenal existence. This world-view, then, contains the following factors: (1) The Infinite energizes under the forms of space and time; (2) the system of energizing according to certain laws and principles, which system appears in thought as the external universe; and (3) finite spirits, who are in relation to this system, and in whose intuition the system takes on the forms of perception. This view is not well described as idealism, because it makes the world more than an idea. If the word had not been appropriated to denote positivistic doctrines, phenomenalism would be a much better title. This word sufficiently implies the objective nature of the world-process, while at the same time it implies that, apart from mind, the phenomena would not exist. Perhaps, with all its disadvantages, there is less risk of misunderstanding in using phenomenalism than in using idealism. If it be asked how there can be an energizing which neither has an object nor which gives itself an object, the answer must be that the energizing according to a law and plan is the object. We may get some hint of what this may mean from the scholastic doctrine of preservation as continuous creation. Such creation could be nothing more than a movement of the divine activity according to the idea of the thing.

But here subjective idealism cannot fail to suggest itself once more. When we were considering the nature of perception, we could find no reason for making things subjective which would not also make persons subjective; and, as

solipsism is too ghastly an absurdity for any patience, we had to admit the existence of other persons. But, so far as the process of perception is concerned, things have as sound a claim to objective existence as persons. We had, then, to assume that things are what they seem, until analysis and reflection should compel us to change our conceptions. But, on going to work in this way, it soon became apparent that the outer world is altogether other than it appears. At last it became clear that the cosmos can be nothing other than a mode of divine energizing which has the forms of perception only in mind. And since this is so, why not go one step further, and declare the cosmos to be only a series of presentations which the infinite produces in the finite? We have now found a reason for affirming pure subjectivity of things which does not apply to persons. Persons are capable of proper existence; but things, in the common sense of the term, are not. Why not, then, regard the infinite spirit and finite spirits as comprising all existence, and make the cosmos merely a series of presentations in finite spirits which have no existence whatever apart from their being perceived? What possible advantage can there be in lumbering up our system with anything more?

These questions also can be answered only by reflection upon the nature of the presentations. It may be that we shall find them such as to compel the admission that our thought of the world is not its only reality. But, first, an exposition of the theory is necessary.

If it were possible for one to play upon another's mind so as to produce a dream-world in the other's thought, that dream-world would have its objective cause, but in itself it would be only an effect in the subject's mind. On this theory of idealism the world of perception would be such a subjective effect, and the creation of the world by God would mean the creation of the thought of a world in finite minds. But for God himself there would be no world-process, no world-activity, no world-development, and no

world-history. There would be only God and finite spirits; and then God, who embraces all finite spirits in his own existence, would produce in them a consistent and harmonious world-vision. His objective activity would be exhausted in furnishing spirits with this vision, and the world would exist for God only as a rule of the process.

Berkeley never attained to any consistency in his thought, but a good part of what he said reduces to this view. Still he was very far from realizing all its implications. First, it is plain that on this theory the object of perception is strictly individual; it may, indeed, be repeated in others' minds in similar form, but in itself, as an effect in us, it cannot carry us beyond itself. There is, too, not the least necessity for any two persons having the same presentations. It would be entirely possible that one person should have the presentations which we label Boston, and that his neighbor should have at the same time the presentations which we label London. There would be no more need that adjacent persons should see the same objects than that persons who sleep in the same bed should dream the same dreams. Idealists have sought to escape this difficulty by saying that all persons have the same presentations under the same circumstances; but, unluckily, the theory gives no hint of what may be meant by the same circumstances for persons other than myself. If I leave my room, I may say that I should have certain presentations if I returned. This statement is not affected by the consideration that the room itself is a presentation, for I may still say that along with the presentation of my room goes also the presentation of the objects in my room. But all this fails to carry me a single step towards the conclusion that my neighbor has the same presentations. Assuming the uniformity of the divine procedure, I may be sure that if he had the presentation of my room he would also have the presentation of the objects in the room; but the fact that I have the presentation of the room is no ground whatever why he should have it.

Everything having vanished into presentations, there is no longer any objective standard of reference. We no longer see the same thing, but have similar presentations; and that we have similar presentations, we learn only in an extremely indirect way. In the nature of the presentation itself there is nothing to warrant us in thinking that it is shared by any one else whatever. If the world as it appears, though phenomenal, were phenomenal of a world-process or cosmic movement apart from our thought, these difficulties could be escaped. Phenomena would then represent the thought-side of the process, and would have a universal element. Difference of relation to the process would explain difference of phenomena, and position could be defined by reference to the phenomena. But when this is not the case, the object is strictly individual.

These obvious conclusions from the theory the subjective idealists have not always been disposed to admit. Thus Berkeley, at times, goes so far as to affirm a universality of the object in perception. The object which exists for one exists for all, though on what he bases his conclusion does not clearly appear. It seems to be, however, the objectivity of the intuition which leads him to this result. Thus, he insists that we know the object to be independent of our mind, and of finite minds in general; and he even makes this manifest independence of the object an argument for the divine existence. For, as the object is independent of finite minds, and yet cannot exist apart from mind, it follows that there must be an infinite and omnipresent mind in which the material world exists. Here the world acquires an objective and independent existence, so far as the finite mind is concerned. It is not merely a series of presentations in finite minds, but these presentations are revelations to those minds of a world existing apart from them. We do not, then, have similar presentations only, but we see the same world.

The view thus reached abandons the extreme form of

subjective idealism. Instead of insisting that we cannot transcend ourselves, and that our ideas are only effects in us, it declares the universality and independence of the object, so far as the finite is concerned. Thus the question is transferred from psychology to metaphysics, and the claim is set up that this universal and independent object cannot exist apart from mind, and hence that it exists in the infinite mind. This view is not very different from Malebranche's doctrine of the vision of all things in God. But Berkeley is very unclear as to the relation of this world to God. At times he allowed the world to exist eternally in the divine thought, and declared creation to be only the manifestation of this eternal thought to finite minds; but still he failed to tell in what the reality of the world consists. To explain the difficulty, we may adopt the Leibnitzian notion of many possible worlds, conceptions of which fill the divine imagination. In such a case there would be no reason for calling one of these systems real rather than another; and there would be no distinction between imagination and reality. All alike would be equally real and equally imaginary. Now Berkeley, in declaring the world to be real for God, gives no ground for distinguishing this real world from another like it which should only be conceived or imagined. If there be no distinction, then the world is not real for God, except as any conception is real for the mind that forms it. For God himself the world is only a thought, and not a reality; in his relation to finite minds it is only a rule for producing ideas. Beyond this the world has no existence. Yet this is the view which Berkeley was not always willing to accept. The only way out of the difficulty is that taken by Leibnitz. For him the world was not merely a divine thought, but a divine act also. As God is will as well as thought, so the world is his act as well as his conception. Without this assumption the world has only a conceptual reality.

But these difficulties result entirely from trying to give the

world a reality beyond our presentations. Any movement in this direction must be away from subjective idealism. But may we not leave Berkeley to shift for himself, and return to the view that the world-vision is purely an effect in us, and also purely individual? We are not in a common world, but only seem to be; and this seeming is due to the fact that the infinite produces consistent and harmonious ideas in different minds. But here, too, we meet with difficulties. First of all, our ability permanently to modify phenomena seems to point to something beyond our presentations. Again, the phenomenal world not only suggests a reality beyond our thoughts, but also a history. The world which appears not only seems now to exist, but also to have existed. The fossils and strata of geology, and the general wear and tear of things, point to a continuous and independent process. These things would be quite out of place in a system of pure presentations, unless the aim were to deceive us. Finally, perception claims to be a revelation of things and processes without us; but on this theory of subjective idealism it is a pure fiction. There is no world-process, no cosmic movement, no going-forth of creative power, no manifestation of omnipotence, but only a magic-lantern show which, after all, shows nothing. The mountains were never brought forth; the foundations of the earth were never laid. We lift up our eyes to the heavens, and instead of a revelation of might and magnificence, we have a presentation; and this we falsely interpret. God is doing nothing in time but furnishing finite spirits with ideas which, for the most part, are illusory. Now it is impossible to avoid a feeling of dissatisfaction with this view as at once poverty-stricken and unworthy. At the same time, it is entirely possible and admits of no disproof. If God have any interest in deceiving us in regard to external knowledge, we have no psychological or metaphysical means of defence against the fraud. Our only ground of assurance is the ethical conviction that such a tissue of deceit and

magic would be disgraceful and outrageous. If we further ask what this conviction is based upon, the answer must be that there is nothing deeper than itself. If this fail, there is nothing left. We hold, then, that the world-process, the cosmic movement, is not in our thought alone; and that the presentations which we have concerning it are real revelations, and not individual phantoms. The world is not merely God's thought, it is also his act. It is founded in the divine will as well as in the divine intelligence. But the ground of this conviction is found less in the psychologic necessity of the admission than in the ethical and æsthetic absurdity of the denial. Thus it appears once more that all objective knowledge of the finite must rest on an ethical trust in the infinite.

Combining the result thus reached with the outcome of previous reflection, we come to the conclusion that the world in itself apart from mind is simply a form of the divine energizing, and has its complete existence only in thought. But since we have shaken off the subjective idealist by appealing to the divine veracity, what shall hinder the realist from using the same argument against ourselves? The disciple of the senses finds both views about equally unsubstantial, and declares that both alike reduce the world to a delusion. If, then, the general truthfulness of the system tells against one view, it must tell with equal force against the other. The answer to this must be that our faculties compel one conclusion and not the other. Our form of idealism is not based upon distrust of our faculties, but upon trust in them. It is held because reason itself leads up to it, and because reason itself shows the common realism to be inconsistent. Some further exposition is needed to clear up remaining misunderstandings.

In reply to the charge of reducing the world to a delusion, the objective idealist calls upon the realist to master the distinction between subjectivity and delusion. Light and sound are subjective, but they are not, therefore, delu-

sions. In our sensibility they have their full reality and value. If, then, the physical universe has its proper significance and reality only in thought, it does not on that account become a delusion, but may still be a strict universal. The idealist further points out that the realist's objections rest on unfounded assumptions. He assumes that the physical system is perfect in itself apart from thought and sensibility, and that the mind has only the function of a copyist. Not even the divine thought and sensibility are constitutive, but only cognizant of what could exist as well without them. Both of these assumptions the idealist denies. He holds that the mind is no copyist simply, that the sentient, emotional, and rational life has a value of its own, and is constitutive as well as cognizant. It is in this life only that the system acquires any significance and truly comes to itself. The realist makes the value of mentality to consist in a copying of the external; while the idealist reverses this view, and makes the value and significance of the outer to consist entirely in its relation to the mental life. What right, he asks, has the realist to charge the mind with falsehood if, instead of a tiresome monotone of vibration, it gives us the world of light and sound with its richness of color and harmony? And what greater right has he to abuse the mind, if it translate the ineffable and unpicturable activities of the infinite into a world of things instinct with the divine thought and life, and alike expressive of both? It cannot be too often repeated that mind itself is a part of the general system; and therefore it cannot be surprising if the system have its complete existence only in mind. Plainly, if the mind is not meant to be a copyist, all ground for charging it with failure and falsehood falls away. Only that is a failure which does not perform its proper function. Only that is false which wanders from its proper path. Every theory has to allow that to a large extent the mind makes the world it sees. Our sensibility clothes the world with light and color and harmony. In itself the physical

system cannot attain unto these forms. The sensitive mind must come before the system can put on these forms of value and significance. The idealist but extends the same thought further. As the system cannot rise to the forms of sense until sensibility is attained, no more can it rise to the forms of rationality until reason is reached. It is thought which gives the system its rational character, and weaves the network of law and relation in which and by which the system has its existence. But in saying this, the idealist is careful to add that this thought in which the system has its existence is not this or that man's thought only, but thought in general. It is the universal reason of the infinite in which the system primarily exists. The infinite, as well as the finite, has thought and reason. In a previous paragraph we pointed out that it is not enough to consider the system as a divine thought alone, but that it must also be viewed as a divine act. Now we point out on the other hand that it is not enough to consider it as a divine act, but that it must be a divine thought as well. And so the final claim of the idealist is that the world cannot exist in will alone nor in thought alone, but in will and thought together. Will gives the reality of the world-process and thought gives the form, and neither has any significance apart from the other.

Still it will be urged that the mind is in some sense a copyist. It has to reproduce in thought the external fact; and what is this but to copy it? And if it fail to reproduce this fact, what can we say but that it distorts it? We are often enough mistaken in our perceptions, and what are such delusions but distortions or a failure to copy the fact as it is? These questions take us back to the Introduction. We there pointed out that thought can never transcend itself so as to grasp objects other than through the conceptions we form of them. From this it was concluded that it is absurd to speak of a knowledge of things apart from thought, and that the true aim of knowledge is not to reach what is true apart from thought, but to reach the universal

in thought. In no case, then, can we rationally talk of the mind as copying the fact; for this would imply that the fact could exist for the mind apart from the conception, and that the latter might be formed on the model of the former. The aim, then, of perception is not to copy objectivity, but to get the universal in intuition; and sense-delusions are not failures to copy reality, but to reach the universal. If the world-process is to be known, it must have a fixed thought-equivalent; and a perfect intelligence would be one which should fully possess this equivalent. Such an intelligence would grasp all phases of the world-process, not only from the absolute, but also from every relative standpoint. It would, then, be aware of all possible sides and phases of being and of all possible relations. All its perceptions and judgments would represent a universal, and any departure from them by other minds would be an error. The aim of perception is to reach such universals, and not to copy something existing apart from all thought. We aim to conceive reality as this being would conceive it from our standpoint. The standard of truth is not absolute being, but perfect knowledge; and error consists not in the parallax of our thought with being, but in its parallax with absolute thought. For us God is such a perfect intelligence; and hence we may say that in perception the aim is not to copy the thing, but to rethink the divine thought and reproduce the divine intuition. There is nothing in rational idealism to warrant the assumption that the thought-side of the world-process is an arbitrary one, or that the process may be conceived in any and every way. Such a view would declare thought essentially unrelated to the process, and could only end in pure idealism. It is, then, entirely compatible with our view to hold that the thought-side is fixed and universal. Our sensibility may be differently affected according to our relations to the process; and it is quite possible that new senses should reveal new qualities. But these qualities would only be modes of our sensibility, and

would represent no fixed nature of the object, but only the way in which it affects our feeling. But this admission is compatible with the claim that, so far as we think the process under the categories of reason, we may attain to strict universality. The decision of this question depends upon our faith or unfaith in the mind's power to reach the universal. Here we content ourselves with pointing out that idealism is compatible with the strict universality of thought and intuition; indeed, it is the only doctrine which is thus compatible.

But what we have said of the inability of thought to transcend itself can hardly fail to leave the impression that there is an opaque mystery of being in some outlying realm of existence from which thought is forever shut out. And we seem to have left the divine thought also in the same state of exclusion. This difficulty arises from separating God as knower from God as doer. The basal fact of the universe is a self-conscious agent. As agent, he maintains a series of activities; and as knower, he gives these activities the form of the world. As agent, he is not independent of himself as knower; and as knower, he is not independent of himself as agent. The divine agency has the forms of intuition only in the divine knowing; and the divine knowing has an object only through the divine agency. Without either of these elements God would not be God. He must be the indivisible synthesis of knowing and doing. As reason, he is real only through the act; and as actor, he is real only through the reason. The reason gives law to the act, and the act realizes the reason. In the ontology we forbade all attempts to analyze the notion of cause into being and power, as if these could be separated; so here we must forbid all attempts to separate between God as agent and God as knower. He is the absolute unity which is at once reason and will, knower and known. With regard to the world-process, it has its reality in the divine will, and its form in the divine thought; so that it could not exist apart

from either. Here we come again on the old antithesis of matter and form. These are absolutely inseparable. Will gives the matter, and thought gives the form. The various stages and states of the world-process have a definite representative in thought; and our thoughts and perceptions, so far as valid, are to be viewed as sections of the universal thought-aspect of reality and its processes. The world, then, is no individual fiction, but is a proper universal. It exists not in finite thought alone, but in the infinite thought and the infinite volition. This constitutes its reality and universality, and distinguishes what we have called objective idealism, or proper phenomenalism, from the subjective idealism of the empiricists. A common conception of idealism is that it teaches only a gigantic and continuous sense-delusion like that of insane persons who fill space with phantoms. And just as the sane see that space to be empty which to the madman teems with demons, so the mind, percipient of reality, would find none of those things in space which we seem to find. The complete difference of our view is apparent. For us space is as real as the phenomena in it, and these in turn are as real as the space in which they appear. Both alike are subjective; but both alike are universal, in that they are phases of the thought-side of reality and are valid for all intelligence from the particular standpoint.

By the world-process, in the preceding paragraphs, we mean only that process which underlies the so-called material world or the physical system. And when we say that this process has its reality in the divine will and its form in the divine thought, and that these two factors are inseparable, we mean to teach no theory of a double-faced substance after the fashion of Spinoza, but only that in the infinite knowing and willing must go together. The finite spirit must be excluded entirely from the cosmic process, as being no part or phase of it. In one sense the finite mind belongs to the system, and in another sense it does not. When by

the system we mean the totality of the infinite's activity and manifestation, of course the finite mind is a part of it. But when by the system is meant only that part of the infinite's activity which underlies the physical manifestation, then the finite mind is no part of the system, but is in interaction with it. Nor can we allow that the physical side of the system has any tendency whatever to pass into or produce the spiritual side as found in finite minds. No doubt it would seem simpler here to speak of a single process which is on one side thought and on the other side act; but such a view identifies the world with absolute being, and leaves no place for the finite spirit. It was at this point that German idealism passed into materialism. All finite life and consciousness were viewed as phases of the one process which, in its ceaseless on-going, brings alike to life and death; and this was simply materialism expressed in uncommon words. We must hold in opposition that there is nothing in the physical process which tends in the slightest degree to pass into the mental by any logical or dynamic necessity; and hence that the spiritual orders of creation are something superinduced upon the physical. To the charge that this is dualism, we reply that the opposite view rests upon a false conception of unity. Unity does not consist in playing the entire oratorio on a single string; but in the accord and common law of many. The unity of a life does not consist in perpetually doing only the same thing, but in subjecting all the activities to a common plan. So the unity of nature, or of creation, consists in no way in the deduction of everything from a common process, but in subjecting everything to a common plan. The unity of the system consists, first, in the metaphysical unity of the basal reality, and in the unity of plan which governs all creative activity and manifestation. Doubtless the entire system might be deduced from its plan, supposing we knew it; but this does not imply that there may not be new beginnings all along the line of the process, which were not dynami-

cally implied in any previous state of the system, but which were logically implied in the basal plan of the whole. And if we are to escape materialism, we must admit a double process in the infinite—the physical process, and a second process whereby the finite spirit is put into relation to that process, and is thus enabled to enter into the divine thought and activity as shown in what we call the world.

In estimating the argument of this chapter we must remember that it is rooted in our ontology, and cannot be adequately criticised from a purely psychological standpoint. It has, doubtless, been a surprise to the reader to find the common order of thought so completely inverted as it is in our claim that the infinite is the most certain factor in objective knowledge, and that knowledge of the objective finite must rest upon ethical grounds for its ultimate assurance. This seems preposterous in any case, and especially so at a time when atheism has received a new lease of life. Hence a theory of perception into which God enters as the chief factor must be a very doubtful speculation. In reply to these scruples we must recall the general course of the whole discussion. In the earlier part of the work we undertook an analysis of our basal notions in order to see how we must think them in order to make them self-consistent and adequate to the function assigned them in our thought-system. This analysis was quite independent of the question whether reality exists or not; it aimed only to tell how we must think of things supposing they should exist. In this inquiry we were led to the discovery that a plurality of things cannot be ultimate, but that they must exist in dependence upon some basal and unitary world-ground as their conditioning source. From this time on, we held that the ground of the world is one; and that the many, if the many exist, can only be in some sense a function of this unitary ground. We had already found that this being must be conceived as an agent, and on further inquiry we discovered that thought cannot rest in any other concep-

tion than that this agent is personal, free, and intelligent. Any other view was seen to be suicidal in its results; and theism appeared as the absolute postulate of all knowledge, science, and philosophy. These results were reached by a simple analysis of thought itself, and are independent of all external perception. Thereafter God was to us at least as certain as any objective fact whatever. We then came to study the process of perception, and we found that, unless we were to content ourselves with a superficial description of our mental states, our psychology must be subordinated to our metaphysics. In particular, we found ourselves compelled to bring the process under the general head of interaction, and make our perceptions effects in us. But what should assure us that they were more? In any case the infinite appears as the real objective ground of our sensations; and we have seen that if these sensations were given, the world of finite persons and things might fall away without our missing them. Hence we had to say that God is the most certain fact of objective knowledge, and that knowledge of the objective finite must rest for its assurance on an ethical trust in God. Formal truth is self-sufficient. The testimony of consciousness to our own states cannot be impugned. The necessity of affirming the infinite can be demonstrated. The necessity of viewing the infinite as free and intelligent, and hence as personal, is likewise demonstrable if we are to escape scepticism of reason itself. But the finite, as other than a phenomenal fact, must be received by faith. Cosmic knowledge, as distinct from a knowledge of our own presentations, is not self-sufficing, but rests on an ethical basis. This is a curious reversal of current views, but there is no help for it. Thus trust in God appears as the factor without which no tenable theory of truly objective perception can be constructed. Psychology alone does not even touch the problem, but merely tells us what we believe, without saying why. References to instinct explain nothing, and simply postpone the question. Metaphysics

but makes the problem and its difficulties clear. Only ethics can solve it. By judiciously ignoring the difficulty, by ad-captandum appeals to common-sense, and, above all, by begging the question, such a solution may be made to seem both unnecessary and absurd; but such a procedure is not compatible with either clear thought or mental integrity.

Having thus secured some ground for trust in objective and universal knowledge, it next remained to inquire what kind of a world our faculties give. The phenomenal world needs no description, and to spontaneous thought seems to be a self-sufficing fact. Reflection, however, served to show that this fact could not be final. Much of it had to be handed over to subjectivity as simply our way of looking at the world-process. But these subjective elements did not, because subjective, appear to be delusions. On the contrary, it seemed possible to regard them as universal though subjective, or as representing the universal thought-side of the cosmos and its processes. Our final conclusion was that if the world be other than a presentation, it can only be a mode of divine energizing which has its reality in the divine will, and its form in the divine thought. In that case, in so far as we have any knowledge of it, we rethink the divine thought and reproduce the divine intuition.

But if this view is to be maintained, another assumption must be made. Sensations are the raw material of knowledge, the incitements which lead the mind to a construction of its objects. But sensations seem to be arbitrarily connected with the physical system. There is no assignable reason why a sensation should attend one form of physical movement or action rather than any other whatever. Besides, there is nothing in sensation itself which favors one kind of cause rather than another. But if the resulting knowledge is to have any universal validity, or is to reveal to us the world-process as it exists in the absolute thought, then these sensations must be so adjusted on the one side to

that process, and on the other to the nature of the finite mind, that the resulting construction must lie parallel to the absolute thought of the system. Without this assumption of an exact adjustment of heterogeneous elements, our cosmic knowledge loses all claim to universality. But, complex as this assumption seems, it must be made by every system which rejects pure presentationism. If not made, then similar sensations do not point to similarity of cause and relation, and unlike causes have like effects. In that case every possibility of objective knowledge falls away, and scientific reasoning about the cosmos and its forms is at an end. It is very common to hear the physicist declaring that we know directly nothing but phenomena, and that these phenomena are totally unlike the things which underlie them. But it is equally common to hear him speaking with great confidence of things which are not and never can be phenomenal. Yet if the phenomena are quite unlike the things, what shall warrant us in concluding from them to things? Plainly such conclusions are absurd without the implicit assumption that the subjective phenomenal elements are accurately adjusted to the objective noumenal realities. If we admit nothing but our own thought-process, we are egoists. If we find this view absurd, and admit other thought-processes than our own, then, in order to make personal communion possible and trustworthy, we have to affirm an exact adjustment between these processes and the mechanism of communication. Finally, if we admit a world-process, we have also to affirm an exact adjustment of sensation to the world-process on the one hand and to the thought-process on the other. We do not, however, make complexity by this theory; we only recognize the complexity which really exists. This general assumption is only a special case of that part of the doctrine of the pre-established harmony which we have seen is a necessary factor of every system which understands its own meaning. For all interaction there must be an exact quantitative and

qualitative adjustment of each to each, or chaos will be the result.

The idealism which we have expounded is essentially that of Kant, although we differ from Kant in his denial of noumenal knowledge. The general method is that of Herbart, who developed the realistic side of the Kantian philosophy. But the most pretentious form of idealism has not been mentioned. This is the absolute idealism of the later German speculators. Kant's philosophy could not stay where it stopped, but either the realistic or the idealistic factor must be given up. Kant himself certainly thought it possible to retain both, but he combined them so unfortunately that while one cannot become a Kantian without being a realist, one cannot remain a Kantian and retain realism. His basal distinction of phenomena and noumena implies both elements. But, unluckily, his denial of objective significance to the categories left the noumena without any ground of existence. Causation, reality, substance, interaction, are categories, and have only a subjective validity. But since we pass to the outer world only by the bridge of causality, there can be no reason for affirming things apart from the mind when this bridge is broken down. The mind is self-determining, and produces its objects from itself. At this parting of the ways the development of Kant's philosophy took a double direction. Herbart and his followers developed the realistic side; and Fichte, Schelling, and Hegel developed the idealistic side.

If we take Kant's doctrine of the categories in earnest, the mind is all, and must develop its own objects. Accordingly Fichte set out to show how and why the mind furnishes itself with objects. He showed how the ego must posit itself, and how, in order to do this, it must limit itself —that is, must give itself objects. In this self-position and self-limitation Fichte finds the origin of the objective world. This world is not something ontologically diverse from the

ego, but only a mode of limitation whereby the ego comes to self-consciousness. But if we take terms in their common meaning, this implies that any individual mind creates its objects entirely from itself and without any incitement from without; indeed, a good many of Fichte's critics understood him to mean that he was the absolute creator of his own universe. Kant's doctrine could lead to nothing but this; but this view was too absurd for any patience. Hence Fichte declared that by the ego he did not mean the individual and empirical ego, but the transcendental ego. But what this ego might be he was not at pains to state very clearly. For the most part, he seems to have meant by it the universal reason, and this is a pure abstraction from the mental operations of thinking beings, who are the only realities. Fichte is as inconsequent as Kant. After having made a great show of logic in denying any external ground of our sensations, he saves himself from pure egoism by the fiction of a transcendental ego which is the reality in all individual and finite egos; and this fiction is reached in defiance of all logic.

But the development did not stop with Fichte. It went on dropping element after element of reality until in the Hegelian school thought was identified with being, and the attempt was made to deduce the universe from the bare notion of existence. In the obvious meaning of the term this doctrine is absurd; and hence to make the proposed identification we must take the words out of their proper signification. When we declare that thought is being, we cannot mean by thought a simple conception, for this would be the extremest nonsense. In that case our thoughts would be things. Or if we prefer to say that pure thinking is being, we must mean by pure thinking something more than the process of comparing, judging, and inferring, which we commonly call thinking; for this is not being, but only a movement in the mind. Besides, both thought and thinking, as thus used, imply a thinker as their subject and the ground

of their possibility. Sometimes pure thought is identified with the system of categories, and these again are identified with being. The ground of this procedure is the fact that if there is to be any knowledge of being, the categories of thought must also be categories of being. But this fact does not justify the identification; for it only says that thought must be able to know being or to grasp its content. The categories as conceived are thoughts only and not existences. The ineffable difference between thought and thing remains untranscended and unexplained. There is not the slightest attempt to show how that which exists as conception in our minds can take its place in the world as real. We have simply an analysis of the content of reason or of formal truth, and no proper identification of thought and reality. But this formal truth is lumped together in the general term reason, and reason is hypostasized into the supreme and only reality. There is throughout a failure to name the thinking subject, apart from which neither truth nor reason has any significance. The concrete and living person disappears, and in its place is put the abstraction of an idea or a system of ideas. The treatment is logical rather than psychological or metaphysical; and the utmost result is to show a kind of connection among our fundamental ideas. Reality is not constructed, but reason is analyzed.

But supposing that the mystery of being cannot be deduced, it is still possible that the various forms of existence can be evolved from thought. If the categories of thought are categories of being, it is possible that an analysis of these categories would reveal what must be true in being. How the content of reason is enabled to be real rather than conceptual may be passed by as an insoluble problem, but it would be a great thing to show that the actual system is a necessary part of that content. This also the absolute idealists sought to do. We have referred to this attempt in discussing the various apriori cosmologies. We there found that the utmost that could be reached by an analysis of

thought would be a formal outline of a possible system, but no insight whatever into the actual system. We further found that even the categories themselves admit of no deduction or construction by thought, but have rather to be accepted by thought as something given. Being, change, cause, space, time, etc., are data of thought, not constructions by thought. They are as impenetrable in their possibility and connection as they are necessary in their affirmation. The sensitive and emotional side of our nature is equally inaccessible to a thought-construction. Here thought but recognizes and gives form to a content which it could never generate of itself. Both the categories of thought and the content of the sensibility are data of the rational process, and are by no means its products. The understanding supplies the name and the logical form of these elements, but for the meaning we have always to fall back upon an immediate experience or intuition. Thus the absolute idealism fails in both of its aims. It neither secures any intelligible identification of thought with being, nor does it deduce the actual features of the system as necessary implications of reason. Finally, the doctrine could only result in a static pantheism, like that of the Eleatics. The consequences and implications of reason are as changeless and eternal as reason itself. With rational truths time has naught to do, but all alike coexist forever. Such a system excludes all movement and progress; and the appearance of movement can only be reckoned a delusion. That this system should ever have given itself out as a system of development is a most extraordinary inconsequence.

But insufficient as we find the doctrine of the absolute idealists, we must admit that the problem at which they wrought demands a solution. Thought cannot transcend itself. It can deal with reality only through ideas. All our scientific effort is but an attempt to bring certain ideas awakened in us by experience into a rational order; and when we have brought these ideas into such connection

that we see how one set must give rise to another set, or how one order of phenomena must be followed by another order of phenomena, we have done all that we can ever hope to do. But all the while we are doing nothing but systematizing our own conceptions. In the Introduction we referred to two orders of mental movement, one of experience and one of reason. The work of science consists solely in transforming the order of experience into the order of reason, or in replacing the factual and opaque conjunctions of experience by the rational and transparent conjunctions of thought. Thought seeks thought everywhere. For the reflective mind, nature is not the complex of external things, but the reason in things. Even when we recognize a system independent of ourselves, our aim is still to think the thought expressed in it. And since thought can never transcend thinking, there must arise, first, an unwillingness to admit anything beyond itself, and, second, a desire to generate all its objects in its own self-enclosed movement. Thus the finite mind comes into difficulties. On the one hand, it cannot view itself as the independent generator of its objects; and, on the other hand, it cannot admit any existence which is essentially unrelated to thought. The only solution of the problem lies in the theistic conception. First, we must hold that the system of things is essentially a thought-system. It is, however, not merely a thought, but a thought realized in act. As such it is real; and as such, it is transparent to thought. Our actual thinking may not grasp it; but, as an expression of thought, it is ever open to the penetration of intelligence. It may be unknown; it cannot be essentially unknowable. Second, we must hold that in the absolute person knowing and being are coextensive. In the divine knowing all is transparent, as in the divine doing all is real. In no other conception can the mind find relief from an untenable idealism on the one hand, or from a suicidal doctrine of the unknowable on the other, or rather from a dreary and endless oscillation between them.

CHAPTER IV.

APRIORISM AND EMPIRICISM.

AGAIN and again we have had occasion to point out that thought can never transcend thinking, and that we can deal with reality only through the conception. This insight has further led us to affirm that the only intelligible aim of knowing is, to reach the universal in thought—that is, to reach such convictions as are based on the nature of reason itself, and not on any peculiarities of the individual. But, to justify such a view, we must assume that reason is one and universal. And this the human mind has generally done. We do not speak of our reason or of our truth, but simply of reason and truth. The proposition to make either individual could not fail to be regarded as an abandonment of both. As the conscience will not tolerate a relativity of duty, so the intellect will not tolerate a relativity of truth. Truth is absolute or nothing. This is tacitly admitted, even by the defenders of relativity, for they all alike appeal to reason, and have not the least doubt that whoever will listen candidly to their arguments will find himself rationally compelled to admit that the doctrine of relativity is absolute truth. Not many of them are so far gone in self-conceit as to assume that their simple assurance is sufficient proof of their views; on the contrary, they propose to appeal to reason, and by such appeals to prove them. But, as this is a crucial and much debated point, perhaps we cannot do better, in bringing our studies to a close, than to examine the opposing opinions; although the subject belongs rather to the theory of knowledge than to metaphysics.

The debate on this question is one of the perennial philosophical discussions. Some there are who hold that the mind is such a citizen of the universe that it is able to know some things on its own account. These persons are called intuitionists, apriorists, transcendentalists. As teaching a power of mental insight, they are called intuitionists. As teaching that we can know some things in advance of experience, they are called apriorists. As teaching that the mind can transcend its particular experiences, and reach universal truth, they are called transcendentalists. Others there are, on the other hand, who view the mind as a learner only, and who make experience the sole source of knowledge. As holding this view, they are called empiricists. But if the mind contributes nothing, experience reduces to sensation, and the empiricist becomes a sensationalist. But, without some principle of movement and grouping, the sensations would lie inert in the mind. This principle the empiricist finds in association, and hence he is called an associationalist. But the title of empiricist, or experience-philosopher, must not mislead us into thinking that the speculators appeal to present experience to get their facts. On the contrary, no school of thinkers ever existed who paid less attention to the facts of mind as it is, for the appearances are all in favor of the intuitional view, that the mind can know some things on its own account. Hence the claim of the empiricists is not that their views are supported by conscious experience, but, rather, that all that is in the mind, whether of faculty or belief, is the product of experience. Appeals to consciousness are especially distasteful to them, as they hold that consciousness itself, even in its simplest utterances, is a product from which the traces of growth have disappeared. And yet, under the misleading influence of the name and a certain innate ambiguity in the doctrine, they have often persuaded both themselves and others that they are pre-eminently the inductive students of mental science. In this way the name of the school has given it

undue influence, and has enabled it to appropriate some of the prestige of physical science. But the true inductive student is content to let the mind be what it reveals itself to be, without attempting to force any preconceived theory upon it. It is hardly too much to say that, on one point, the empiricist generally turns apriorist. For, unless he have an apriori knowledge that the mind cannot have apriori knowledge, it is hard to justify the distortion of actual experience which he sometimes resorts to in order to carry through his speculative theory of intellect.

In discussing this question, two points must be kept distinct: (1) the forms of intellect and the corresponding forms of experience; and, (2), the ultimate warrant of knowledge. With regard to the first point, the intuitionist holds that the form is essential to the mind, and is contributed by the mind to experience. The empiricist holds that the form, in both cases, is the product of sensations and their laws. The former, then, seeks to show that experience is impossible without some principle of form in the mind, and the latter seeks to show that form and faculty alike are the outcome of sensation. With regard to the second point, the intuitionist claims that the ultimate test and warrant of rational truth are to be found in the mind itself, or in its own native power to know. The empiricist, on the other hand, holds that the only warrant for believing anything whatever is the fact that it is found to be valid in our particular experiences. These two points, though quite distinct, have seldom been clearly separated by the disciples of either school, and thus differences have arisen within the two schools. Some intuitionists have devoted themselves entirely to proving that form and faculty are innate or essential in the mind, and have given no thought to the second question. But that their conclusion from innateness to universality is hasty is shown by the fact that Kant made the existence of innate faculties and forms the ground for denying absolute knowledge. Thus one may be an intuitionist as to the ori-

gin of faculty, and a relativist or agnostic with regard to knowledge. Among the empiricists, also, we find diversity of aim and purpose. Some—as Condillac and Spencer—confine their attention chiefly to the genesis of faculty and belief. They seek to identify all the mental functions—such as memory, reason, judgment, conscience, etc.—as modifications of the common process of sensation. Empiricists of this type abound in appeals to heredity, and regard the law of evolution as having profound significance for the problem, especially because it furnishes them with the time needed to work the desired transformations. Other empiricists, again, as Mill, regard such speculations as philosophically irrelevant. Chauncey Wright, in a review of Spencer, dealt very severely with him for fancying that the doctrine of heredity alters the case in the least. At bottom, he says, the crucial question is not how we come to believe, but why we believe. The intuitionist says, we believe because we see the truth; the empiricist says, we believe because we have found the proposition believed valid in past experience. Here, then, emerges again the distinction between the causes and the grounds of belief to which we have referred in the Introduction. The debate involves two questions, one psychological, the other logical or philosophical. The genesis of belief is distinct from the grounds for believing.

In the earlier forms of the empirical doctrine, none of these questions were distinguished. Even experience itself had no clear meaning. In general, it meant the view of things which is held by spontaneous and uncritical thought. The empiricists of Locke's school did not doubt that experience gives us a world of substantial things, and all the categories of thought, as space, causation, etc. Locke even held that the law of identity is established by experience. With this outfit, they found it very easy to make the mind purely passive in knowing. Sensations were viewed as copies of the thing, and these were supposed to be imported ready-

made into the mind. Then, as to their combinations, they are given combined in sense-experience, and are firmly held together by association. Thus we reach at once a copy of the world as it is; and, because of the apparent immediateness of perception, the theory had great plausibility with the unthinking. But it was based entirely upon a flat and uncritical notion of the process of knowledge. Berkeley and Hume showed that less is given in experience than common-sense had assumed, and that experience must be restricted to sensation. But no analysis of sensation reveals any trace of substance or causation. Finally, Kant showed that the experience to which the empiricists had been accustomed to appeal is itself impossible, except through a constructive action of the mind, according to certain apriori principles. We have seen, in studying perception, that it must be brought under the notion of interaction, and that all our knowledge of the outer world, both the framework and the filling-up alike, is an expression of the mind's inner nature; and we have further seen that the constructive action of the mind is such as to give the system qualities which it has only in the mind itself. This is so much the case that the Kantian, the relativist, and the agnostic agree that we can know nothing as it is. The activity of the mind is such, according to these theorists, that it completely masks the true nature and relations of the object, and renders them forever inaccessible to our thought. Any of these views explodes the crude empiricism of the Lockian sensationalists. Indeed, even the subjectivity of sense-qualities is incompatible with the complete passivity of the mind. In any case, our thought of the world is composed entirely of subjective elements, and in this sense the whole of our knowledge is apriori. The universe in interaction with a physical element produces motion and physical change. The universe in interaction with a mental subject produces thought, feeling, and a world-vision. The different result in the latter case depends upon the peculiar nature of the mind. No matter how real the

outer world may be, it can be reached only through a corresponding world within. The further fact with which our study has made us familiar, that, to a large extent, the mind creates the world it sees, deprives this crudest form of sensationalism of every semblance of credit. That form was based on the passivity of the mind in knowledge, and on the assumed similarity of the mental copy to the outward object. It falls, of course, when these assumptions are rejected. The only claim which can be tolerated, even as an hypothesis, is, that sensations themselves are the only apriori element in the mind, and that they and their laws serve to explain all the laws and forms of thought.

Empiricism of the crude type has always had strong tendencies towards materialism. It cannot consistently allow the reality of the mind, without admitting that the nature of the mind must be a determining factor of knowledge; and conversely, the denial of the mind as such a factor could not logically stop short of denying the reality of the mind altogether. That which has no definite nature fixing the modes of its activity is nothing. But, while empiricism leads to materialism, materialism is incompatible with empiricism, as we have shown in speaking of the materialistic theory of knowledge. The materialist, we said, builds on the conception of fixed elements with fixed laws; and this makes it impossible for him to view the laws of thought as in any way adventitious. On the contrary, he must hold that the laws of thought are just as fixed in the nature of matter as the law of gravity or of chemical affinity. For the materialist, no experience whatever is needed for the profoundest mental insight, but only the production of the appropriate organism. Nor can the materialist speak of learning from experience; for to learn in this way we must stand apart from the experience and reason upon it, and thus deduce principles for our future guidance. But all this is impossible in materialism. We do not have experience; we are the experience. And whatever passes in

the mind is purely the outcome of what the organism is at the moment. In short, materialism is incompatible with anything but the highest form of apriorism. It must always hold that, when thinking does take place, it is a manifestation of the inner nature of matter; and hence it must hold that the laws of mental manifestation are as fixed as the laws of physical manifestation. That the same conclusion holds for every system of necessity is evident. Every such system must build on the notion of fixed law, and hence it must hold that all forms of manifestation are but the outcome of the fixed and changeless necessities of being. There is no reason in such systems why knowledge might not begin at the highest point and with a host of intuitions. It is very common, indeed, to find empiricism combined with materialism, but their incompatibility is evident. Apriorism must be allowed to be far more in harmony with all our modes of thinking than empiricism. We regard all the physical and chemical elements as having a distinct and definite nature of their own, which nature, moreover, determines all the outgo of the elements. It would provoke a smile, if an empiricist should propose to view the laws of the elements as inherited, acquired, or the result of habit and experience. The intuitionist only applies the same general principle when he thinks of the mind as a reality with a fixed law of its own. The apriori conception, we repeat, is far more accordant with the established methods of thought than the empirical view. But, before seeking to decide between the theories, it will be well to expound apriorism, or the intuitional conception.

The intuitional doctrine was originally known as the doctrine of innate ideas. This phrase was unfortunate, and led to a mistaken polemic on the part of the empiricists, and one which even yet has not ceased. They fancied that the doctrine is that all men are born with a certain stock of full-blown ideas, or intuitions, which appear in every consciousness, so that whatever else one may be ignorant of, one knows

that space must be infinite, time eternal, that there can be no accidents without a substance, and no event without a cause. Probably many extravagant utterances on the part of intuitionists may have seemed to affirm such a doctrine; but in general a scanty amount of fairness and a still scantier amount of insight would have served to show that no such view was held by intuitionists. All that intuitionists, in general, have ever held is, that the mind is such that, when roused to activity by continued contact with the outer world, it will necessarily develop certain forms of activity from which certain principles, or mental formulas, may be abstracted. These principles will not be imported into the mind, but will be expressions of the mind's own nature. As such they will be innate, not something acquired from without, but something developed from within. The intuitionists further hold that though such principles may be reached only through experience, they are independent of experience for their verification, and, indeed, that they cannot be strictly verified by experience. In this independence and self-verification, the intuitionist finds the distinguishing mark of apriori truth. But the mistake of the empiricists, as to the meaning of the doctrine, set them to rummaging in the minds of babies and idiots and savages for failing cases; and every such failing case they viewed as a disproof of the doctrine. The same mistake has made the mass of their arguments totally irrelevant from the time of Locke to the present.

To begin with, the empiricist has commonly mistaken natural for omnipresent; and holds that nothing can be viewed as founded in the nature of mind which is not omnipresent in mind. Accordingly Mr. Mill insists that, in order to tell what belongs to mind as mind, we must look in upon the mind of the infant as it lies in the nurse's arms; and now that the notion of heredity has become fashionable, some will have it that we must go back to the first stirrings of the primitive polyp in order to reach mind pure and simple.

The tacit assumption is that all which cannot be found in the mind prior to experience must be viewed as an adventitious product of experience. If the child knows nothing of right and wrong, truth and error, laws of thought, etc., these things must be viewed as adventitious to the mind, or as imposed upon the mind by a contingent experience.

The implications of this view are very curious. It implies, first of all, that all the latencies of the mind are revealed in the infant consciousness. This conception, again, is based on the notion that mind is simply the sum of mental states, and not their active subject. Hence, the proposition to look in upon the infant's mind as it lies in the nurse's arms. If we find no ideas, we may conclude that the mind owes all its ideas to experience. But, upon any other theory of mind, this notion is simply ludicrous. To one who holds that the mind is a true agent, nothing could seem more improbable than the fancy that the infant consciousness reveals all the possibilities of essential mind. Indeed, there is no reason for believing that our mature consciousness reveals all the latencies of our nature. It is conceivable that, in new conditions, the soul should not only experience entirely new orders of sensation, but should also arrange its objects in entirely new forms of intuition. Except to one who holds that mind is only the sum of mental states, the proposition to make babies the popes of philosophy is one of the strangest whims in the history of thought. The proposition to inspect the infant's consciousness, in order to find what belongs essentially to mind, is like a proposition to inspect its body to find what is natural to the body. And the conclusion, from the emptiness of the child's consciousness to the adventitious nature of the mental principles which afterward appear, is like a conclusion that various features and functions of the mature body are products of experience, because the child's body shows no sign of them. In fact, this notion of determining what is native to the mind by inspecting consciousness before experience begins

rests upon a complete misunderstanding of intuitionism. This does not teach that mental principles exist in the mind as formulas of which we are always conscious, but only as principles; just as the nature of the oak exists in the acorn and conditions its development. Whoever is able to grasp this simple principle will thereafter have done with appeals to the infant's consciousness.

Again, the empiricist's conception of natural as omnipresent involves a strange oversight of all the analogies of nature. It would imply that blossoms and fruit cannot be natural because for years the growing twig gives no sign of them. Doubtless the intuitionists have been guilty of extravagance; but there is nothing in the general doctrine of a conditioning mental nature to forbid the notion of development. The intuitionist may hold that the mind reveals its latencies successively just as the body does; but at the same time he may hold that, when revealed, they are no more products of experience than apples are products of experience. The empiricist, on the other hand, confounds development with adventitious acquirement; and whatever is developed in the mind he views as a product of experience only. Here, again, he betrays his misunderstanding of the intuitional theory. The difference between the idea of development and that of adventitious acquirement is as great as that between natural hair and a wig, or between one's own beard and false whiskers. Yet the empiricist thinks it relevant to point out that ideas are developed. But so long as the mind is regarded as a real thing, so long the mental nature will be a conditioning factor of knowledge, and all that experience can do will be to bring out the latencies of this nature. This fact, that internal development is to be distinguished from external accretion, makes it impossible to decide between apriorism and empiricism by any natural history of intellect; for such history would only describe the order of growth and manifestation without deciding anything as to its source.

Again, there is nothing in intuitionism rightly understood which teaches that the mental development is unconditioned and irresistible. If there were, then the search for failing cases would have some relevancy; but no one holds such a view. It is natural that an apple-tree should bear apples; but this nature is not absolute. It may be so thwarted in its development that the outcome shall be mean and worthless, or even so that it shall never come to flowers and fruit at all. Our mental nature is conditioned in the same way. Under untoward circumstances it may be thwarted and crippled, and may hardly attain to the lowest form of a rational life. Locke suggests, as a disproof of intuitionism, that persons might be so brought up that they should never attain to any rational ideas. The misunderstanding here is patent. The fact on which he insists does not prove that experience is the sole source of knowledge, but only that the human mind is conditioned, and that, like all other conditioned things, it depends for its proper manifestation upon the fulfilment of the conditions. The intuitionist, then, holds that there is a mental nature which conditions all our knowledge. This nature is subject to development, and is conditioned in its unfolding; but when it does unfold, the resulting principles are founded not in experience, but in the mind itself. The intuitionist is not even under obligation to hold that the self-evident is always self-evident; on the contrary, he may hold that a considerable mental development is necessary before the mind can discern the self-evident; indeed, he may even hold that, owing to the blinding influence of experience, no knowledge is so hard to reach as that which to enlightened thought is self-evident.

The extreme vagueness of conception which, historically, has marked the debate between apriorism and empiricism must excuse the somewhat wandering character of the discussion up to this point. It is now time to leave these general remarks and come to close quarters with the question.

And we cannot do better than restate the problem as given in an earlier paragraph. We there pointed out that the question is double; concerning, first, the origin and genesis of faculty and belief, and, second, the warrant for believing. The first is the psychological question, the second is the philosophical. On the first point, the intuitionist holds that there are original principles in the mind whereby alone experience is possible, and that these may be learned by a study of the mind's action. The empiricist holds that faculty and belief alike are generated by association working upon sense-experience. On the second point, the intuitionist holds that the mind is able to know some things on its own account, and that the warrant for such knowledge is simply rational insight. The empiricist holds that our particular experiences are the only warrant for believing anything. These two questions, the psychological and the philosophical, we keep distinct, and discuss in their order.

In beginning the psychological discussion, we must first ask for the empiricist's starting-point, or for what he conceives as the data of his problem. Empiricism often allies itself to scepticism, and contends that we do not know anything. But this is to change the question and bring thought to a standstill. Besides, such a course is suicidal; for by its denial of all knowledge it removes all ground from empiricism, and leaves self-conceit or obstinacy as the only standard of belief. In order, then, not to reduce the debate to a farce, we must assume that some knowledge is possible, and that the laws of thought are valid. If at any time empiricism should be found inconsistent with any proper knowledge, then the theory would have to be rejected as self-destructive. Further, the debate must be carried on on the assumption of the reality of the soul, as we have seen that materialism and empiricism are incompatible. This fact further makes appeals to heredity irrelevant; for unless we adopt a thorough-going realism, each soul is ontologically distinct from every other; and unless we adopt a theory of

metempsychosis, we are now existing for the first time. In that case, it is as absurd to speak of one mind as inheriting its laws from another, as it would to speak of one physical element inheriting the laws of its action. Each mind can only be viewed as a new factor in the system; and whatever new tendencies or powers the new mind may exhibit, they are not to be viewed as deposits of experience in it, for the particular being has had no experience. In short, the laws of heredity must be viewed simply as descriptions of a fact, and never as its explanation. If God has chosen a law of development as the norm of his cosmic activity, there will be of course an ascending series of mental subjects; not, however, as if the physical produced the mental, or as if ancestors passed on something to posterity, but solely because of the inner consistency of the divine action. When the doctrine of heredity is held, as it often is, in connection with materialistic views, it is doubly worthless for the empiricist. Besides, the doctrine has its peculiar dangers for empiricism, in that it yields to apriorism the field of individual experience, and claims only to deduce faculty and intuitive beliefs from a race-experience. But this is to surrender empiricism in the only field in which it can be tested. It admits the apriori faculty and intuition in the only minds of which we know anything, and puts the constructive process in distant and hypothetical minds. Hence, although the majority of empiricists have viewed the exchange of the individual experience for a race-experience as a master-stroke, the more rigorous and logical among them have not failed to see in it an implicit abandonment and surrender of their principles.

Another point remains obscure, and must be cleared up in advance. There is no agreement among empiricists as to the place of the outer world in their theory. Most empiricists have taken the world for granted, and in about the same form as it has for common-sense. They assume the world to exist as an objective reality and as the ground of mental movement. In particular, the human body is so real

that they regard physiology as the foundation of psychology. The laws of nerve-currents and their combinations contain all the secrets of the mental life. There is, then, a world of substantial things causally connected in space and time; and the only problem they recognize is how to generate in the mind a picture of this order both in its coexistences and in its sequences. And this problem they find extremely easy of solution. As there are fixed orders of coexistence, sensations are given in groups, and by association are united into fixed clusters. In this way our notion of thing or substance is formed, and our knowledge of things is gained. There are also fixed orders of sequence in the outer world, and, as a consequence, there is a tendency to a fixed order of sequence among sensations. In this way arises the notion of laws of nature and laws of thought. Again, because there is a fixed order of coexistence and sequence in the world of things, connected coexistences and sequences will be more frequent in experience than unconnected ones. The latter must be irregular and infrequent compared with the former. Hence, experience itself will tend to separate those coexistences and sequences which belong together in the nature of things from irregular and accidental ones; and thus by the simple repetition of experiences we learn to separate those coexistences and sequences which belong together in the nature of things from those which merely happen together in our experience. In this way all that is in the mind can be explained without assuming any original mental insight. The mind is purely passive, but reality photographs itself accurately upon it.

There is a certain innocence in this view which cannot fail to disarm hostile criticism. If there were some way of assuring the existence of this world of substantial things in causal, spatial, and temporal relations, the view would not be without plausibility. But Hume showed that such a world can never be reached by experience. Cause, substance, space, and the other categories of thought, do not report themselves

in experience, but are the data of experience. If, then, experience be the sole source of knowledge, there is nothing to do but to declare these ideas to be unaccountable delusions without the slightest claim to reality. This fact is a great embarrassment to the empiricist. If he accepts a real world, he has to admit that there are elements in such an admission for which his philosophy does not account. If he denies a real world, then the apparent foundation of the doctrine in common-sense disappears; and that fixed order of coexistences and sequences, upon which so much reliance is placed, vanishes altogether. The extreme discomfort of being impaled on either horn of this dilemma has led some empiricists to seek to slip between them. Accordingly, Mill has proposed to explain the outer world as only a projection of subjective elements. In this view, feelings are the basal fact, and nothing is said of their origin. We need not go behind them; and with them we can easily explain our world-vision and our beliefs concerning it. But in spite of this assurance we must go behind them and ask one or two questions. Are these feelings objectively determined or not? If not, then we are pure egoists, and no one has the least ground for doubting that he is the universe. If it be replied that these feelings are not determined at all, neither from within nor from without, but simply are, we get into worse trouble than ever. For in that case antecedent feelings would have no effect upon consequent feelings, and only a factual sequence of mental states would remain. There would be no determination of belief or knowledge by experience, and any belief or knowledge which we might possess would be an opaque but independent fact. Each fact would be its own and only warrant. If we trusted knowledge at all, it could not be on the ground of experience, but only on the warrant of the knowledge itself. In that case the empiricist's deductions, explanations, and various theories of mental genesis would vanish utterly; and thus, by sheer excess of empiricism, we should transcend the

doctrine and come back to a curious kind of apriorism. We cannot even be empiricists without admitting the idea of causation, that is, the determination of one thing by another, or of one state of a thing by an antecedent state. But this idea cannot be found in any sensitive experience. It remains a mental datum, and if not accepted as such must be rejected altogether. But on none of these points was Mill clear. He was not willing to take the world for granted in quite so innocent a fashion as most empiricists; but if we should strike out all assumptions of objective existence, some of his best arguments would collapse. No more was he willing to allow the law of causation, but his entire system rests upon it. In fact his system is a most discreditable seesaw of views in which egoism, nihilism, Berkeleianism, empiricism, scepticism, and vulgar realism all play a part according to the exigencies of the argument. The most valuable result that emerges is the conclusion that, for aught we know, two and two may make five in some other planet.

We said that, before beginning the discussion of the psychological question, we must inquire for the starting-point and postulates of empiricism. We find, however, that there is no agreement among empiricists as to where their theory starts and what it assumes. For the sake of progress, therefore, we make the empiricist a present of the outer world in any form he may desire, and wait to see what he will do with it. But as the soul is real, and as perception comes under the head of interaction, it is impossible to lay the ground of knowledge entirely in the object. The nature of the soul must also play a part in determining the product. This necessary admission is restricted by the empiricist to simple sensibility. Susceptibility to sensation and feeling is all that is original to the mind. The apriori elements of knowledge are to be found in sensation and feeling, and not in any laws or forms of thought. These affections, as quite unlike anything which can exist in the object or apart from the subject, may be regarded as due to the peculiar nature

of the mind; but all else is product. In itself the mind has no tendency to arrange its sensations in one form rather than in another; and the form which they actually assume depends entirely upon the object. As the greatest variety of tunes may be played upon a piano at the pleasure of the player, so the greatest variety of utterances might be educed from the mind by a properly arranged reality. Instead, then, of regarding the actual laws and forms of thought as essential to mind, we must rather view them as a particular tune played by a particular experience. Any other tune, however, is equally possible, and, if real, would seem just as self-evident as the present one. Thinking is not an act of the mind, but rather a process in the mind. The basal fact is sensations and feelings shifting and combining according to the laws of association; and when this process has become complex, and certain lines of uniformity have been marked out, we call it judging and reasoning. In this view, the aim is not to dispute the validity of knowledge, nor to inquire for its warrant, but solely to explain the genesis of faculty and belief.

For the success of psychological empiricism, no conditions could be more favorable than those assumed in the preceding paragraph. Certain obscure questions might be raised, as, for example, whether the empirical theory does not imply an imperfect appreciation of law and uniformity in its assumption, that ideas may be joined in any and every way. We might also ask whether we have not covered up a great many differences with the terms sensation and feeling. The fact is always sensations and feelings, and not sensation and feeling. These abstract terms are simple and undifferentiated, but the feelings and sensations themselves must show every variety of difference in order to account for the variety of mental objects. Why should a given sensation result in the thought of a cat, and another in the thought of a dog, unless there be an original cattiness in one, and an original dogginess in the other? Certainly, we do not escape com-

plexity by lumping mental states under a single term, we only cover it up. But we pass over these scruples, and oppose to the theory of the last paragraph the claim that there are elements in the mental life which no amount or modification of sensibility can ever produce. These are the rational elements of knowledge. If, then, we view sensation as a first order of mental reaction, a reaction against external action, we must view the rational forms of activity as a second and higher order of mental reaction, a reaction against the sensitive states themselves.

This claim can be judged only by assuming a purely sentient mind, and endowing it with sensations. If from combination of these elements we see the higher forms of judgment and reasoning resulting as a necessary consequence, the empirical view is sustained; but if, on the other hand, we find in the sensations themselves no reason for advance, the apriori view is sustained. This experiment we made in discussing the process of perception, and we need only recall the results. We suppose the mind to have n sensations. By hypothesis the mind is purely sentient, and hence without any tendency to work its sensations over into the higher forms of rationality. The sensations, then, must lie in the mind inert and motionless, unless some principle of movement be introduced. This principle the empiricist finds in association, whereby the sensations are variously united into clusters and series. We need not stop to criticise the laws of association, although they are far from consistent or transparent; we content ourselves with pointing out that they do not help us to transcend sensation. Whereas, before we had n scattered and individual sensations, now we have n sensations variously grouped, but n sensations still. Having put nothing but sensations in, we can get nothing but sensations out. We may think to help ourselves by conceiving the process to extend over long periods, so that the complexity of the grouping shall become very great; but still the fact is simply n sensations. The ideas of substance, cause, iden-

tity, continuity, space, likeness, and unlikeness have not yet appeared. And here we have to make a choice: either we must admit that associating sensations cannot generate these ideas, or we must declare these ideas to be nothing but associated sensations. In the former case we abandon empiricism, and in the latter we come into collision with fact. By substance we do not mean a cluster of sensations, but the objective ground and subject of qualities. By causation we do not mean the antecedence of one part of our experience to another part, but we mean the determination of one real thing by another. These ideas we actually have, and the empiricist attempts to explain them; but the explanation consists in changing the problem, and calling something else by the same name. In either case, we abandon empiricism. In the first case, we confess that associating sensations will not explain the ideas in question; in the second case, we confess that sensation will not explain them, unless we are allowed to mean something else. Finally, if we should allow the latter explanation, we should be plunged at once into nihilistic egoism. Substance as only a cluster of our sensations, and causation as only antecedence and sequence in our experience, can have no objective significance. Not until we pronounce the words cause and substance in their proper meaning can we transcend our own subjectivity; and, in this sense, these ideas are not given in experience, but are brought by the mind to the explanation and rationalization of experience. And even where there is no question of metaphysical substance, as in the case of the judgment, we still see the mind giving its objects the form of substance and quality. The noun appears as the independent base of the sentence, and the predicate is joined to it under the form either of inherence, as in the adjective, or of causation, as in the active verb. Until this distinction is made, thought has not begun; but this distinction is not contained in sensation. The same is true of the notion of identity. Until the notion of an identical subject is thrown

into the flow of sense-experience, there can be no judgment of any kind. Even the simplest statement of experience involves this apriori element. If the statement be that we have seen something change its place, we transcend experience. The fact is that we saw a group of nearly similar phenomena appear at successive points of space in successive moments of time. That we saw a thing move, or that the group of phenomena is the same at the end of the motion as at the beginning, is by no means given in the experience. There is nothing whatever in the sensations themselves which calls for the assumption of an identical subject; and if there were a mind without any necessity of rationalizing its experience, it might have a constant repetition of similar sensations, without the least suspicion of an identical subject. It is quite indifferent to the present inquiry whether there be any identical subject or not; the mind does universally view its objects under this form of identity and continuity; and this form is a mental addition to the sensible experience.

The mind deals with its objects under the forms of cause and effect, substance and quality, identity, continuity, and space. These forms we regard as contributed by the mind, and for the reason that there is nothing in simple sentiency which shows the least tendency to produce them. We further pointed out, in discussing perception, that the faculty of judgment must be regarded as an advance beyond any possible reach of sentiency. To have like or unlike experiences does not insure a knowledge of their likeness or unlikeness. We also saw that all knowledge of relations, of whatever kind, involves a peculiar rational activity of the mind. Every judgment of likeness or unlikeness, and every perception of relations, whether simple or complex, are more than sensations; they are acts upon sensations. It is oversight of this fact which has led many empiricists to attempt to deduce all the faculties as modifications of sensation. By association the present tends to recall the past, and this is

memory. By association like tends to get with like, and what is the association of like with like but a judgment of their disagreement. By association also unlike ideas are dissociated, and what is this but a judgment of disagreement. But judgments also associate and dissociate, and this is reasoning. Thus memory, judgment, and reasoning are all seen to be but phases of the one process of associating sensitive states. To all this it is sufficient to say that the recurrence of a past state is not memory, and that the presence of like or unlike states of feeling is not a judgment of likeness or unlikeness. The most complex order of likeness and unlikeness can exist without the least recognition of them as such. Empiricism of this type roused Mill's deepest wrath. In his essay on Coleridge he speaks of Condillac's theory as "a system which affected to resolve all the phenomena of the human mind into sensation by a process which eventually consisted in merely calling all states of mind, however heterogeneous, by that name; a philosophy now acknowledged to consist solely of a set of verbal generalizations, explaining nothing, distinguishing nothing, leading to nothing." Mill would have had a great deal of difficulty, not in justifying this judgment, for it is strictly correct, but in reconciling it to his own philosophy; for Hume did certainly show that a consistent empiricism must become sensationalism; and Kant showed that experience, in Locke's sense, involves a multitude of apriori elements. But, however this may be, judging and reasoning are not simply occurrences in the mind in which the cohesive attraction of association is the only ground of movement, but they are pre-eminently active processes, of which the mind is the active subject. In sensation the mind feels that it is receptive rather than active. In association the mental mechanism plays a prominent part, but in reasoning the mind is fully conscious of itself as self-determinant. Mental action is so far from being exhausted in the processes of association, that the mind, in reasoning, turns upon association, re-

sists and controls its processes, and undoes many of its conjunctions. Not until the transparent order of reason is reached, not until the premises are seen to compel the conclusion, will the reasoning mind give its assent. But this is something entirely different from sentiency. It is self-determined activity. But if we are resolved to stop at nothing, and insist on viewing the judgment as only a mechanical association and dissociation of ideas, then all rationality perishes. Judgments become simple facts in us, and one is as good as another while it lasts. Such association or dissociation would not contain the least ground for an objective or universal affirmation.

A final difficulty in the empirical psychology is the fact that the most frequent conjunctions of experience do not produce the most assured beliefs; whereas, the theory would imply that those beliefs would be most enduring whose elements are most frequently experienced in conjunction. We have many beliefs which coerce acceptance; for example, the universality of causation and of mathematical truth. Beliefs of this sort the apriorist calls intuitions, and founds them upon a direct insight by the mind into their self-evident truth. The empiricist prefers to describe them negatively, as beliefs whose elements cannot be separated in thought; and when the ground of this impossibility is asked for, he replies that absolute uniformities of experience generate absolute uniformities of thought. The elements of these beliefs having always been conjoined in experience, it is impossible to think them apart. Since we are shut up to experience, and since experience has always given us certain elements in conjunction, of course we cannot think them asunder. Mr. Mill suggests that, if a single failing case had occurred in our experience, possibly we might conceive the untruth of our most assured beliefs without much effort. To this it is sufficient to say that we have absolute sequences which are easily thought asunder, while we have rational principles which are incessantly violated in appearance, yet

without in any way weakening our conviction of their truth. Since the race began, the sequence of day and night has been absolute in experience, but there is not the least difficulty in conceiving one apart from the other. Again, the general course of nature has been uniform in the experience both of the race and of the individual, but it has wrought no conviction that this uniformity is necessary. The uniformity of nature ought to be the supreme intuition, if uniform experience generates necessary beliefs. The law of causation, on the other hand, is subject, in appearance, to incessant violation. Everywhere the scientist is guided by the belief in causation, but, in the great mass of phenomena, he is quite unable to detect it. What are the causes of good and bad weather, of the shape of the clouds, of the direction of the winds, of most forms of disease, of all the low forms of life? Indeed, so far as proper knowledge is concerned, the greater part of nature sets the law of causation at defiance. Of course, it is impossible ever to observe causation in the proper sense of the term, but, allowing the possibility, it is plain that, in the great majority of events, no causal connection can be traced at all. It is not experience, then, which makes the law of causation a universal truth, and the uniformity of nature only a contingent assumption. The same is true for mathematical principles. We find them, also, incessantly violated in appearance. We have but to look down a street, or down a line of railroad, to see parallel lines meeting. Perspective distorts and falsifies all geometrical principles and relations. In short, our senses are at constant war with rational principles. And yet we are told that possibly a few failing cases might help us to conceive the falsehood of all rational principles, when failing cases are the rule rather than the exception. But the reason sits regnant over these confusions of the senses, testing and rectifying them by its own self-centred principles. It is a matter for profound wonder, in view of this most patent feature of sense-experience, that any

one should ever have dreamed of making it the sole source of rational truth. As empiricists, we can escape this difficulty only by assuming a mental tendency to associate objects in one way rather than in another, or a stronger primal associability between some ideas than between some others. But this is only a roundabout way of abandoning empiricism. A mental tendency would be indistinguishable from a mental principle, except in name, and the different degree of associability would only be another way of saying that, in the nature of thought, some ideas belong together and others do not. A degree of associability so high that the ideas have to be put together only once in order to cohere forever is a suspicious conception for empiricism. It assumes apriorism in the ideas, if not in the mind.

Thus far we have dealt only with the psychological question. The empiricist proposed to explain the genesis of faculty and belief by the simple association of sensitive states. The failure is evident. Allowing the world to be real, and to produce sensations in any desirable order in the mind, it is still impossible to transcend sensation by sensation alone. In order to rise above the sentient plane, the mind must react against its sensitive states with a special rational activity, and bring into them the ideas of substance and quality, cause and effect, identity and continuity, space and time. This thinking, judging, differentiating activity of the mind is evoked, but only evoked, by sensation; and these ideas are norms of this activity and not deposits of sensation in us. At every step of mental movement, the mind appears as organic. It does not passively receive and simply retain what is put into it, but it reacts against the external contribution as an organism against its food, modifying, assimilating, and working it over into the forms required by its own nature. That which gives the empirical view such plausibility with the uncritical is the fact that these mental principles are so inwoven with all mental

action that we take them for granted, and even seem to find them given in sensation itself. That experience, in the common-sense of the term, is impossible except through these principles is something undreamed of; and the statement, when made, seems like a needless complication of a very simple matter. We pass now to the philosophic question concerning the ground and warrant of belief. For the present we confine ourselves to rational truth or truths of reason.

This question brings us into an entirely new field; but unfortunately it has not been kept distinct in thought by either the empiricist or the intuitionist. Both have confined themselves mainly, the former almost exclusively, to the causes and genesis of belief. Accordingly they have run a race for the polyp and even for the primitive star-dust, in the full conviction that the debate between them depends on what may be found at that distant point and in those raw beginnings. But it is high time to point out that this performance is philosophically irrelevant. The important thing in philosophy is not to know how belief is produced, but what it is worth when produced. If, then, it could be shown that all beliefs are innate, or that they are all generated in us by experience, the philosophical question would still remain open and unanswered. The innate is not necessarily true; for it is quite conceivable that error should be innate as well as truth. The question, says Mill, is not whether consciousness can be trusted, but what consciousness can be trusted. If we could reach the pure utterances of consciousness, these, he admits, would be impregnable to doubt. He speaks of them as "original elements of mind" and "original beliefs." But the fact that an utterance is pure, or primal, or original, is not in itself the least ground for accepting the utterance as valid. It is possible enough that there should be pure, primal, and original errors as well as truths. Hence, to prove a belief innate is not necessarily to prove it true. On the other hand, if the genesis of every belief could be traced so that we

could refer the total content of consciousness to its adequate causes in our psychological experience, we should have no standard for distinguishing beliefs as true and false. We should merely have the beliefs as psychological facts; and their truth or falsehood would still have to be determined. And this determination can be made not merely by considering the origin of the belief, but rather by reflection upon the content of the belief and the grounds which are offered for it. In general, in order that a belief be philosophically acceptable, it must be self-evident, or it must be proved, or at least made probable. Either in itself or in its relation to other propositions it must have reasons which warrant its acceptance.

From this standpoint the claim of the intuitionist becomes that there are certain universal truths, that these are known by direct insight, or by their own self-evidence. By universality he means, not that every one knows the truth, but that whenever any one comprehends the subject, he will see the predicate to be a necessary implication. Thus the shortest distance between two points is a straight line. There may be persons who have not and cannot have the ideas contained in this proposition. Points, distances, and lines may have no existence for them; and for them the proposition would be neither true nor false, but unintelligible. But when these ideas are possessed and are brought together, then the mind sees that the subject implies the predicate. Such propositions the intuitionist calls universal truths. And for him the ground for accepting them lies entirely in our insight into their self-evidence. This insight he regards as an ultimate fact of mind. It may be variously conditioned by experience, and by the mental mechanism; but when it is reached, it is self-sufficing. If the mind had not the power of holding its objects apart in distinct thought, it could not attain to insight of any kind. This power is the psychological condition of thinking, and often enough it is lacking. This is especially the case with

the uneducated, and all experience it more or less. In dealing with large numbers, or with complex figures or arguments, we have a vivid sense of our psychological limitations. We cannot hold the object clearly before the mind, and all insight fails. When we have counted a large number, we are never sure, unless we have carefully watched each step, that our counting is correct. Our insight, then, is psychologically conditioned; and no thinker can be trusted who cannot hold his objects apart in clear thought. To assist the mind, we resort to various devices. The child counts his fingers, or blocks, etc. The mathematician draws his diagrams and writes down his figures. The abstract thinker repeats his processes so as to become familiar with them and grasp them more clearly. But all of these things are only means for getting the object clearly before the mind. They assist the representative power rather than the reason. They are the psychological conditions of reasoning, and not reasoning itself. But when the conditions are fulfilled, there comes a moment of insight. In order to see that parallel lines will never meet, we must be able to form the conception of lines, and we must bring them together in a parallel position, and contemplate them in that relation. So far all is preparatory. Then the mind sees that the proposition is true. It asks for no further evidence, but has the knowledge in itself. This insight, the intuitionist holds, admits of no deduction from the previous psychological state. It is immediate and original. It is psychologically conditioned in its coming; only a long training may enable one to reach it; but it is self-sufficing when it comes. This insight, again, the intuitionist holds, is not merely an impotence or an inability to separate subject and predicate in consciousness. Empiricists have given this impotence as the standard of truth, and they have declared those propositions to be true whose opposites cannot be conceived. The intuitionist insists in return that such an inability in itself proves nothing. Unless it be

but the opposite side of a positive insight into the truth, one cannot imagine a more insufficient test of truth than this. That A and B cohere in consciousness is only a psychological fact; that they cannot be torn asunder in consciousness is likewise a psychological fact. The inference therefrom, that A B is a universal truth, is one in which we miss all logical connection between premise and conclusion. The inconceivability of the opposite is a test of truth whose value is purely negative. When propositions put on a delusive show of self-evidence, we discover the fact by setting up the opposite and perceiving that it is possible in thought. The test has no further value. By insight, then, the intuitionist means something positive, a self-sufficing knowledge. From this it will be seen how abjectly irrelevant the appeals to mental development must seem to the intuitionist. He recognizes that certain psychological auxiliaries are necessary to rationality, and that these are subject both to development and to paralysis. But just as the auxiliary lines by which we demonstrate a theorem do not make the theorem true, but only furnish a standpoint from which we can see its truth, so our psychological development does not make the truth we recognize, but furnishes the conditions of its recognition.

In discussing the psychological question, it appeared that the empiricist has no clear conception of his own system. The same fact appears in discussing the philosophical question. Two questions may be distinguished: (1) Is there any universal truth? and, (2), How do we know such truth, supposing it to exist? Concerning the first question, the empiricist is not clear in his own mind. Sometimes he thinks we possess a knowledge of principles which are universally valid, and regards the second question as the only one at issue. He has even been known to grow indignant at the charge that his theory makes knowledge impossible. This he repudiates as an attempt to cast unjust odium on his view. And yet he himself plays the sceptic at times. He

remembers that Hume used the empirical theory to explode all knowledge; and there is an advantage, at times, in being able to doubt an authority which may be quoted on the other side. Having doubts in general about the law of identity, we need not be careful to preserve a narrow consistency. Mill, at times, reasoned from his theory of the causes of belief to the denial of universal truth; although, to save unpleasant questions, he demanded "a reasonable degree of extension to adjacent cases." Accordingly, when he suggested that two and two may make five, he was careful to locate the possibility in another planet. If a shop-keeper had counted him out a couple of two-pound notes, with the remark that they made five, Mill would doubtless have regarded this as one of the "adjacent cases" to which the recognized rules of arithmetic demand "a reasonable degree of extension." Frequently, however, the empiricist claims that the question is not whether there be any universal truths, but only how we come to their recognition; and his doctrine is, that we learn these truths only by induction from experience. This is the view which we have to discuss. Empiricism, as scepticism, is suicidal; for, as scepticism, it throws doubt upon those principles which are necessary to its own proof. In that case we could not believe without being compelled to doubt.

We assume, then, that there are universally valid principles, but that we learn them only by induction from experience. Of this claim various criticisms must be made. In the first place, all proof presupposes some principle or some knowledge which is valid in its own right; that is, which is self-evident. Otherwise proof would never come to an end, and all proof would be impossible. If A is not self-sufficient, it must find its warrant in B; and if B is not self-sufficient, it, in turn, must find its warrant in C. But if C is likewise in need of support, neither A nor B is proved so long as C is not established. It is, then, plain either that there must be some propositions which,

because self-evident, need no proof, or else that nothing can be proved.

This point deserves further elaboration. The attempt to prove first principles must always assume some other principle which is truly first. This is particularly the case when the proof is simply an induction from experience. The proof of a universal from particulars always passes from many to all on the warrant of some other universal, and without this other there is a lack of logical connection. To see this, examine the proof of the law of causation on this view. Of course, experience gives us no case of causal efficiency, but only antecedence and sequence; but, allowing that it can give more, what warrant is there for extending it to all events whatever? The mere fact that the notion of an event cannot be separated in thought from the notion of a cause which produced it is, on this theory, only a subjective fact, and can never be any warrant for extending the notion beyond experience. It is an effect in us, and not a law of being. What, then, is the warrant for transcending experience and making the law universal? We may take refuge in pretended scepticism, and, while insisting on the law for all possible experience, and especially for "adjacent cases," claim that it is doubtful if the law be universal. But if this position be taken in earnest, and not as a mere evasion, it is plain that there is no rational ground whatever for transcending experience. But if we are not willing to declare that all science is based on a baseless assumption of causation, then we must attempt to give some proof. And this proof, again, can only consist in appealing to some other principle. We may say that nature has fixed laws, and, hence, that any law which reveals itself in a long experience may be viewed as universal; but this assumption is in far greater need of proof than the law of causation itself. To most minds the law needs no proof, while this assumption that nature has fixed laws, and that they must reveal themselves in our infinitesimal experience, is neither self-

evident nor even probable. But we may try another principle, and say that nature is uniform; and, as we have found the law of causation true in experience, we may conclude to its universality. But this bridge is as weak as the other. To begin with, the uniformity of nature is not half so evident as the law of causation; indeed, it is a pure postulate, without which physical science could not go on, but for which there is not the least necessity of thought. An irregular, unpredictable course of things is just as possible as any. Of valid proof there is not one word. If we attempt to conclude from n cases of uniformity to the $(n+1)$th case, we miss all logical connection, or we pass by some assumed principle, generally the one in question. The conclusion has not the slightest force without the assumption that regularity of sequence points to a fixed and inviolable order, which reveals itself in its action, so that from a part we may know the whole. But this assumption is not nearly so clear as the law of causation which is to be established. The fancy that we may pass from n cases to $n+1$ cases by the doctrine of probabilities is especially unfortunate when first principles are in question, for the doctrine has no application at all except in a system of fixed law.

Again, this uniformity of nature itself, apart from being neither proved nor self-evident, is very unclear in its meaning. It cannot mean a uniformity of phenomenal order, for this order is not uniform. The present phenomenal order is a mere eddy in the onward flow of being. The time was when it was not, the time will soon come when it will be no longer. What, then, is this uniformity to which appeal is so confidently made? It would, probably, turn out to be that like antecedents have like consequents. But, apart from the fact that the total antecedents of two events are never the same, this proposition has not the slightest significance without the implicit assumption that the antecedents determine the consequents; that is, the principle of causation must be evoked for its own deduction. Now it is

plain, from these considerations, that the attempt to deduce universal principles from experience is self-contradictory, for the deduction itself can only take place on the basis of assumed principles. The testing of principles, also, can proceed only on the same basis. To test a principle whose truth is in question, we compare it with another assumed to be more evident, and judge the former by its relation to the latter. But the standard itself can never be a matter of deduction. It must be judged by itself, by its own self-evidence. And this self-evidence can be discovered and announced only by the mind. Ultimate principles must be accepted on the authority of the mind, for there is nothing else on which to found them.

The same conclusion appears from another standpoint. Experience is not only the source of truth, but the source of error also. Empirical polemics have made us familiar with the fact that custom can give a delusive appearance of self-evidence to the greatest absurdities; and the history of thought shows that the misleading influence of association has always been the greatest hinderance to the discovery of rational truth. But since all beliefs are the outcome of experience, and since these beliefs are often the most diverse, it follows that some standard of choice between them is called for. As simple psychological facts, one is as good as another. As such, they are neither true nor false, but simply mental states. They must, however, be true or false as well as simple facts, and some standard of judgment must be found. Since, by hypothesis, the mind has no insight of its own, the standard must be found in experience itself. We are, then, forbidden to call any combination of ideas more absurd or irrational than any other. Such terms are without meaning in our system. Some combinations are more frequent than others, that is all. It would seem, then, that relative frequency is the only test of truth. But a double difficulty meets us. First, it is not plain without some further assumptions that this test is better than any other.

May it not be that improper combinations occur more frequently than proper ones? Indeed, this is actually the case in all popular thinking. Besides, who shall assure us that relative frequency in our experience points to an absolute frequency in all experience? Second, our trouble in this matter is increased by the incessant assurance by the empiricist that the great mass of beliefs are totally false. They are conjunctions of ideas which experience has produced, but which are nevertheless pure superstitions. It is a grave matter that experience should be so careless, that it should be the source of so much error and of so little truth. And even that truth can never be certainly known as such. The mind has no insight into its necessity; and who can tell what a future experience may do? Whoever will follow these considerations out to their logical results will see that there is no middle way between scepticism and the admission that the mind has a standard of truth in its own native insight.

It would be extremely convenient at this point to become sceptical with regard to universal knowledge, and confine ourselves to affirming principles which have been learned from experience, but which must have, of course, a reasonable degree of extension to adjacent cases. It would, indeed, be hard to tell what a reasonable degree of extension might mean, or just how much extension would be reasonable; but we could safely count on the average dulness to overlook this difficulty. Such a procedure, however, would not be compatible with mental seriousness. Either there are universal principles, or we know just what we have experienced and nothing more. The empiricist, then, must admit the principles and seek to prove them. In the last few paragraphs we have sought to show the contradictory character of this attempt; we now propose some specific cases.

The law of identity and contradiction is a thought-law, and, according to the intuitionist, needs no proof. The em-

piricist will not allow that the mind can know anything in its own right; and hence the law must be proved. Unfortunately, no proof is possible which does not assume the law. If A is not definitely A and not non-A, then no proposition has any meaning, and anything may be everything. Even the empiricist's denial of the intuitional view would be undistinguishable from its affirmation. Thought cannot begin without the law, and any argument for it begs the question. We have considered in a previous paragraph the attempt to deduce the law from our experience of the same things. We there saw that sameness is never given in successive experiences, but only a certain similarity. The sameness is a mental addition. The law, then, cannot be proved, but must be either accepted or rejected. If accepted, it can only be on the warrant of the mind itself; if rejected, all thought is at an end.

Again, what is the proof of the law of causation? In a previous paragraph we assumed, for the sake of argument, that causation proper can be observed; but this is not the case. Only antecedence and sequence can be observed; and they contain no hint of causation. Day precedes night, and the moments of time succeed one another in ceaseless flow; but no one dreams of causation. And since experience never gives us a link of causation between events, it is idle to talk of deducing the law from experience. This law, too, must be either accepted or rejected. If accepted, it can only be on the warrant of the mind; if rejected, the following conclusions must be noted: (1.) Nothing is either caused or causal; but events are, or come, or go, for no reason. No event whatever has any determining connection with any other event; and no event offers the slightest logical ground for affirming or expecting any other event. (2.) Pure egoism must result. Mental events are all we know; and these by hypothesis have no objective ground. If one have a vision of a friend entering the town, or of a ferocious dog making furious demonstrations, or of a well-spread table, or of a happy

family, it is all an opaque and groundless fact in the personal consciousness. There is no reason for it without or within. We contemplate our own visions, and have not the slightest ground for thinking that there is aught but the single self. (3.) This conclusion, as we have seen, cancels empiricism itself. For no mental state has any longer any influence over any other mental state. Hence the past leaves no deposit in the mind and gives no direction to the future. By sheer excess of empiricism we transcend all its alleged explanations and geneses of faculty and belief, and come to the conclusion that each mental state is itself, and is rooted only in itself. Any conviction, then, which we may have, must be accepted as its own and only warrant; and this is an extravagant intuitionism. But if we cannot accept such a tiresome farrago, we must accept the law of causation, the reality of being other than ourselves, and the continuity and eternity of existence; and we can do this only on the mind's own warrant. The continuity and eternity of existence are implications of the law of causation. What existence is thus continuous and eternal, the law does not say; it only demands that there shall be somewhere a continuous and eternal being. It is compatible with the law of causation that phenomenal antecedents should have no influence upon phenomenal consequents. It is possible that both antecedents and consequents are but effects of a power underlying and distinct from both.

We next refer to mathematical truth. In a previous chapter we have shown that space is a mental principle which the mind contributes to experience. We here point out that the truths evolved from this principle are also no product of experience, and for the most part are unverifiable by experience. Schopenhauer has drawn up a list of axioms concerning both space and time which admit of neither deduction nor proof. Space is one and continuous. Spaces cannot be interchanged. All spaces are parts of the one space. All parts of space coexist. There is no succession

in space, but only in time. He gives twenty-eight propositions of this kind; and certainly the most of them utterly transcend any experience real or possible. Mathematics also is born of reflection upon intuitions in space and time. Given these intuitions of space and number, the mind unfolds the entire system of mathematics by simple analysis and synthesis of them. In learning these things we are not referred to experience, but are made to understand the meaning of the terms employed. Nor in testing the truths of mathematics do we appeal to experience, but to the reason which produced them. Once in a great while it is proposed to verify a geometrical demonstration by measurement; but, in general, such a suggestion is attributed either to loss of faculty or to arrested mental development. Whatever experience might do in this matter, it is not the source of our knowledge, and it is not its justification. If we extend experience to mean experiment, we still find it utterly inadequate. Experiment never taught that the area of the circle is equal to the diameter multiplied by 3.14159+, etc.; indeed, it cannot even verify the claim. If the general principles for determining areas were assumed, the fineness of measurement required would make it impossible to test the proposition. Experiment alone could never give us astronomical distances or molecular values. Both of these lie beyond any possible experiment. No more does experiment assure us that the product of any large number by another is correct. The numbers could easily be taken so large that a lifetime would not suffice to count the product. In all such cases we reach results which lie beyond any possible verification by experiment. These results are derived from reasoning on intuitions; and for them we have no warrant but the mind itself. It would be an interesting spectacle to see an empiricist trying to get the equations and laws of vortex motion in a perfect fluid by means of experiment. If he should succeed in this task, he might next try his hand at discovering by experiment the geometry of a space of n dimensions.

Here it may be urged that while mathematical truth in general is not directly obtained from experience, it is indirectly so obtained; as the axioms on which it is based are products of experience. If this claim were allowed, it would be distinct abandonment of the attempt to identify reasoning with association. It admits that the results are not experienced, but are deduced from experience. The mind is allowed to work over and combine elements given in experience, so as to reach results impossible to experience. Thus by reasoning on experience we transcend and enlarge it. But, apart from the fact that this view is an implicit abandonment of empiricism, we derive no help from it. If we regard the axioms and intuitions of mathematics as not self-evident, we must prove them; and this is impossible. We cannot prove them even for the single case. We cannot know from experience that any two parallel lines will never meet; indeed, we may be perfectly sure that any two which we can draw will meet at a greater or less distance. The absolute accuracy which the doctrine of parallels requires is impossible in experience. Again, we could never learn from experience that any given straight line would not at last return into itself. The least variation from the absolute line would make it the arc of a circle, and no inspection would reveal the difference. The curve would be imperceptible to sense, and therefore sense could not decide the question. For all such propositions we are thrown back upon our space-intuitions and their corresponding definitions. Doubtless these intuitions are awakened in us by experience, but they are never given in their purity in any experience. The perfect circle, the true parallels, the absolutely straight line, we have never seen, and should not know them if we did. For any straight line which we could draw, a segment of a large circle could always be substituted; and no sense could tell the difference. For any two parallels, we could always substitute the segments of cutting circles; and, if the circles were large enough, no sense could tell the difference. Since,

then, there is no warrant for saying that any two actual lines will never meet, and since, on the contrary, we may be perfectly sure that they will meet, it is absurd to appeal to experience to prove the doctrine of parallels. Similar reasoning applies to other propositions.

But suppose it were proved by experience that a given proposition is valid in a single case, what warrant is there for extending it to all cases? Allow that two given parallels will not meet, does that warrant us in saying that two others at right angles to the former, or lying outside of the orbit of Neptune, will never meet? May not direction have an effect on the fact? or may not different parts of space have different geometrical properties? Besides, what shall assure us that time itself may not modify all mathematical truth? Suppose it be found that the equation $\sqrt[n]{ab} = \sqrt[n]{a} \times \sqrt[n]{b}$ is valid for particular values of a and b, that does not warrant us in making it universal. If a and b and n are taken as large numbers, and a and b are surds, it might seriously embarrass the empiricist to prove the equation for a single case; but to prove it for all quantities would be a task. Either we must posit an insight by the mind into the nature of space and number, or we must confine ourselves strictly to experience. In the former case we abandon empiricism; in the latter we have to say, with Mill, that for aught we know two and two may make five. Of course, to avoid trouble, we locate the possibility on some other planet. The principle itself contains no reason why it should be on some other planet rather than on this planet and in the next moment; but the prudential reasons for removing the wonder to a distance both in space and time are obvious. The principle also contains no reason why two and two should make five rather than five thousand, or even nothing. If adding can create, it can create a multitude as well as a single unit, but, upon the whole, it is best to stop at five. However, put the marvel in another world, and outside of "a reasonable degree of extension to adjacent cases," and we can play dog-

matist and sceptic as we like. Of course, great care must be taken to prevent any inquiry as to what a reasonable degree of extension may mean; for such questions, if pushed, could not fail to be disquieting.

Upon the whole, we cannot accept empiricism. As a psychology, it fails to explain the facts of mind; as a philosophy, it is suicidal; as a system, it is without consistency. If, however, any one still feels well disposed towards the doctrine, we venture to suggest a few points to be kept in mind. (1.) Let him decide what he means by experience. If he means only affections of the sensibility, let him show how such affections can generate the laws and categories of thought. If he means by experience the old-fashioned, unreasoned view of Locke, in which all the categories were implicit, let him answer the Kantian question, How is experience possible? (2.) Let him decide as to the place of the outer world in his theory, whether it be real or unreal; a determining ground of our mental life, or only a projection of sensitive states. If he decides that our mental states are objectively determined, let him show where he gets the notion of determination. If he decides that they are not objectively determined, let him show how to escape pure egoism. If he decides that there is no determination anywhere, let him show that his own doctrine does not disappear. (3.) Let him further decide whether he admits any universal principles or not. If he does admit them, let him show how universal principles can be deduced or proved from a particular experience without positing a self-sufficing insight in the mind. If he denies both the insight and the fixed principles, let him show that any proper truth remains, or that the result is not an overwhelming scepticism. (4.) Let him also master the distinction between the causes and grounds of belief, and keep the two questions separate. After he has fairly grasped the difference, let him give some standard of truth which shall not either vanish into scepticism or rest upon mental insight. Of course, in doing this work, he is

expected not to beg the question, and not to appeal to thoughtless common-sense to help him out of trouble. Common-sense is good in its place, but its place is not to defend a theory from its own consequences. The proof, if given at all, must be from the data of the theory itself. Pending such proof, we hold that the mind is able to know some things on its own account — that is, apriori. This apriori character of rational truth, however, does not consist in its being universally or easily known, but in the fact that, when known, the mind accepts it on its own warrant.

We have expressed at great and wearisome length our disagreement with empiricism; it remains to offer a word of criticism of apriorism. In its extreme form, as held by the absolute idealists, this view regards being as a rational necessity; and, as reason is timeless, a pure pantheism of the Eleatic type, and a rigid fatalism, result. But fatalism is also scepticism, and knowledge perishes. Contingency and freedom are as necessary to reason as insight and necessity. But, apart from this extreme view, the apriorists have been guilty of oversights which justify the existence of the experience school, and which are almost as inexcusable as the imbecilities of extreme empiricism. We have often referred to the fact of two orders of mental movement—an order of experience and association, and an order of thought or reason. The empiricist is one-sided in trying to reduce the latter to the former, and in ignoring all elements which resist reduction. The extreme rationalist is equally one-sided in trying to reduce the former to the latter, and in ignoring the elements which resist reduction. We have also pointed out that speculation may proceed from the standpoint of the pure reason, or from that of the individual mind. The intuitionists have occupied the former standpoint, the empiricists have occupied the latter, and both have ignored the just claims of the other. Accordingly the rationalists have dismissed questions concerning the human

mind as dealing only with "the history of the individual," and have confined themselves mainly to the impersonal reason. In this way they have ignored most of the facts of reality, and have made reason a substantial existence. Thus there results a complete oversight of the fact that reason is real only as thinking beings exist. The best outcome of this way of philosophizing is a system of categories, which is very good as far as it goes, but which does not go very far. For, because this system must explain everything, it explains of itself the peculiarities of nothing. It is purely formal, and gives no insight into the details of reality. Hence reason, as a system of formal truth, does not account for a single fact of the outer world, or for the actual order and content of our inner experience. In this respect it is like the principles of mechanics, which, while ruling the changes of matter and motion, account for neither matter nor motion. Our certainty, on rational grounds, that there is causation in the cosmos, tells us nothing concerning what is caused, or concerning the method and order of this causation; indeed, it does not even tell us that there is a method. In treating of cosmology, we saw that none of the specific laws of the system are rational necessities; and we further saw that if they were, they would necessitate no actual product without assuming a certain set of arbitrary constants. There is likewise nothing in the pure reason to explain the variegated processes of mental association. These, doubtless, belong to "the history of the individual," but they are facts, nevertheless. The attempt to solve such problems by appealing to the pure reason, whether spelled with a small or a large R, is almost enough to justify the narrowness of empiricists in general. There will always be, then, a large and highly important field to be occupied by experience; for, of n systems and facts, all alike logically possible, experience only can show which has been realized. A cosmic order is possible which should admit of no rational interpretation. Such a system might be entirely repre-

sentable; and, indeed, the present system is such a one in many of its features. The bulk of its phenomena, in the present state of our knowledge, do not admit of being brought into any rational connection, ætiological or teleological. What is thus partly true for us in the present system might well be universal. Owing to the absence of a fixed method, or to the incommensurability of the components, a cosmic order might exist which should be purely kaleidoscopic. That the actual system admits of a rational construction, as well as of representation, is a fact learned only from experience. The discovery of this fact enables us to bring our rational principles, especially those of space and number, to the interpretation of experience; but even then the arbitrary data of the problem must all be learned from experience. If we insist on deducing these data themselves, it cannot be from the pure reason, but only from the plan of the whole. There is, then, in our total experience a contingent as well as a rational element; and the former can be learned only from experience. That both are necessary to rationality has already been pointed out.

Another prominent shortcoming of the apriorists is the failure to recognize the value and significance of feeling and life in the universe. The result has been a one-sided intellectualism and an exaggerated estimate of logical forms. The tendency has been to regard the individual, the only reality and the seat of all values, as having no significance beyond serving as a specimen of a category. In this way life and personality have been degraded from their true significance into abstract forms without either life or meaning. But there is always something deeper than thought; it is the thinking, living person. And there is something deeper in the person than formal thought; it is life and aspiration. Reality is not merely to be comprehended under logical forms; it is also to be lived and enjoyed. We have seen that the understanding gives only the form, and not the content of existence. Hence the æsthetic, the ethical, and

the religious nature have always claimed to bring us nearer to the life of being and its true significance than the understanding can ever come. In the contemplation of the beautiful, in devotion to the good, and in the service and worship of the perfect, we enter into the inmost life of reality, and become one with the universe. It is the gravest oversight on the part of intellectualism to overlook all this, and seek to reduce man to understanding only.

We said that the possibility of understanding the world lies in an insight into its purpose, because the formal necessities of reason explain nothing but possibility. But the purpose of things is largely hidden from us, and there is nothing to do but to confess that God's ways in the world are past finding out. Evidences of skill abound, but the purpose of the whole is hidden. We cannot even surmise the meaning of most of the arrangements of the system. We see no end, or none which seems worth realizing. But one general assumption is necessary to save the mind from pessimism. We must assume that the end of the system is such as to justify the system, and this compels us to put the end in the ethical realm. If ever a sufficient interpretation of the system is found, the basal principle of the system will prove to be an ethical one. No analysis of our metaphysical notions will ever reveal why the system is as it is. Such insight is even formally possible only as we rise above the plane of ontology and formal thought, and come to the conception of purpose. And in determining which of many purposes shall be adopted we must rise to the conception of the fitting and the perfect. But this, again, can be determined only by appeal to our æsthetic and moral insight. If what is shall ever be understood, it will be only from the side of what ought to be.

CONCLUSION.

THE understanding is supposed to have great power, but the misunderstanding is mightier still. Nothing gives one so profound an impression at once of the strength and of the total depravity of the human intellect as the perverse ingenuity of the misunderstanding. We have not the slightest hope of escaping the persecution of this malign faculty; and yet it may be allowed, in bringing our work to an end, to make a final attempt to ward off two patent misconceptions.

Not to hit a mark at which one does not aim is, in itself, no hardship, but to be blamed therefor is a matter for great patience. Concerning our speculations, one class of critics will ask what light they throw upon practical questions. Is there anything in our conception of cosmic laws as being modes of procedure on the part of the infinite which gives even the least practical information as to what those laws are? Does the view that the atom is only an elementary form of divine agency contain any hint of its actual properties? Does the alleged reality of the soul explain observed differences of disposition, talent, temperament, etc.? Does it even account for one single feature of the interaction of soul and body? And, since a negative answer must be returned to all these questions, the critic proceeds to condemnation. But surely it ought to be some bar to judgment that we have not sought to do any of the things suggested, and that we said so at the start. It has not even occurred to us to seek for a detailed knowledge of reality by way of

speculation. We have not sought to discover the specific laws and forces of the system, but only how we shall think of such laws and forces, discovered or undiscovered. Our aim has been to get an outline-conception of reality into which all knowledge of details must fall, and according to which details must be understood. No important discoveries are likely to be made until we have first learned what may be discovered. In order to progress, there must be guiding and interpreting principles. Hence it is not permissible to deal with details in an arbitrary or lawless fashion; they must rather be interpreted according to the basal principles. Principles, then, not details, are the subject of our study. At the same time, we are fully aware that, if our conclusions were all valid, we should still be shut up to observation and experiment for all knowledge of the details of the system. Indeed, this fact is now so little questioned that only the might of the misunderstanding can excuse any reference to it. The incessant repetition even of good advice becomes at last somewhat tiresome. Upon the whole, we decline being blamed for not doing what we have never sought to do.

Another class of critics will reverse this misunderstanding. While the former critics reject all inquiry into principles, the latter reject all study of details. If such critics should agree with the principles expounded, they would regard practical investigation as useless, if not impossible. Approval of this kind would be like praise for hitting a mark that had not been aimed at—a performance which, in the "abysmal depths of personality," gives very little satisfaction. Yet such extravagance is not unknown in the history of speculation, nor is it even obsolete. Theistic writers have often spoken as if the affirmation of purpose in the system contained all that is worth knowing. In truth, however, such affirmation reveals neither the actual purposes of the system nor the mode of their realization. It is, therefore, not blasphemy, but the simple truth, when the practical

scientist says that God is of no use in the laboratory. The profoundest theistic faith gives no practical facility with the electro-magnet or in directing chemical processes. But this point has been sufficiently emphasized in treating of the mechanical theory of the system. We wish only to decline to be considered as an opponent of inductive science, or as offering any substitute for it.

But, leaving the misunderstandings to themselves, what is the conclusion of the whole matter? The first is, that life and being are vastly more mysterious than we commonly think. Again and again have we returned to the current views of things; and, although they seemed self-sufficing at first, they have invariably vanished into mystery. In particular, the mathematico-mechanical view of existence disappeared when being, in itself, was seen to elude all space-determinations. Along with this view vanishes all hope of picturing being in its true existence. Finite things coexist in unpicturable relations of interaction, and in unpicturable dependence upon the unpicturable infinite.

A second conclusion is, the impossibility of saving reason from utter distrust of itself and its conclusions on anything but a theistic and spiritual basis. It may be that philosophy and rational science are impossible on any basis; they certainly are so on any atheistic or materialistic theory.

A third conclusion is, that the necessity which is supposed to rule in the system is mainly a shadow of the mind's own throwing. Nature shows no trace of rational necessity, and ontological necessity is a phrase to which no clear thought corresponds.

A fourth conclusion is, that the grounds of objective certainty in our knowledge of the finite lie neither in psychology alone nor in metaphysics alone, but also, and chiefly, in our moral convictions concerning what ought to be. There is nothing deeper in mind than these, and if they fail, then logic can only declare that there is no longer any warrant

for regarding our world-vision, with all that it contains, as more than our private dreams. The logical weakness of objective science and the ethical postulates on which it rests have never yet been made the subject of an adequate examination.

At the beginning, two questions were distinguished, How is knowledge possible? and, What is the nature of reality? The former question was turned over to the theory of knowledge, and the latter was reserved for our study. In fact, however, the two questions have not been kept entirely separate, especially in the latter part of the work. Some of the psychological discussions belong as much, at least, to the theory of knowledge as to metaphysics. This fact has two grounds. First, the two questions run into each other, and neither can be fully discussed without some reference to the other. The other ground lies in the mystery of self-determination.

THE END.

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